LETTING DATE 10-18-2022

HMA RESURFACING/COLD-IN-PLACE RECYCLING
STP-028-1(16)--2C-91

WARREN COUNTY

IOWA DOT

REVISIONS

TOTAL
--
PROJECT IDENTIFICATION NUMBER
22-91-028-010
PROJECT NUMBER
STP-028-1(16)--2C-91
R.O.W. PROJECT NUMBER

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WARREN COUNTY

HMA RESURFACING/COLD-IN-PLACE RECYCLING

0.1 mi N of IA 92 to 0.2 mi S of W North Ave in Norwalk

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

INDEX OF SHEETS

For Project Location Map
Refer to Sheet No. A.2

Project Design Events:
DM5 – 06–28–2022
D7 – 08–02–2022

WARREN COUNTY DESIGN DATA RURAL		
2022 AADT	5,325	V.P.D.
2042 AADT	6,033	V.P.D.
2042 DHV	550	V.P.H.
TRUCKS	7	%
Total Design ESALs	701,280	

INDEX OF SEALS

A.1	Jonathan W. Bahr	Primary Signature Block
X	X	X

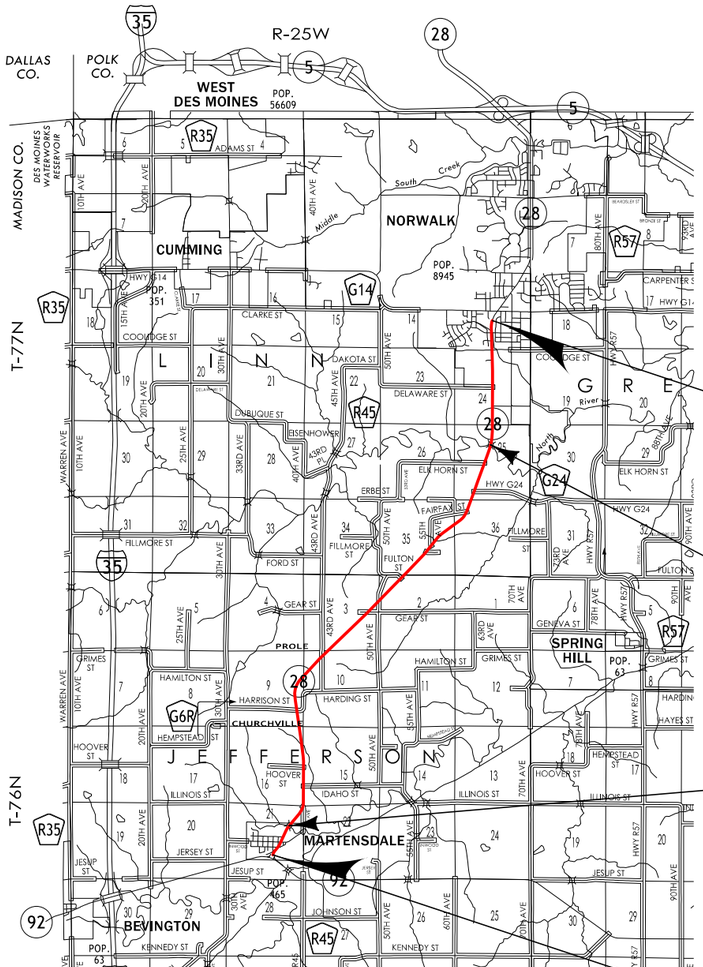
PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN – Date: 03–11–2022

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER A.1

8:11:08 AM 3/11/2022 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9102801022\Design\CADD_Files\Sheet_Files\SHT_91028016_A01_A14.dgn



END PROJECT
STA. 434+92
REF. LOC. 8.22

FHWA 51051
MAINT 9106.6S028
238' X 40' PPCB BRIDGE

FHWA 51041
MAINT 9100.5S028
34' X 40' CONCRETE SLAB BRIDGE

BEGIN PROJECT
STA. 9+63
REF. LOC. 0.17

LOCATION MAP SCALE
0 1 2 3
Miles

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER A.2

8:11:09 AM 3/11/2022 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9102801022\Design\CADD_Files\Sheet_Files\SHT_91028016_A01_A14.dgn

TO OFFICE: District 5

ATTENTION: Bob Younie

FROM: Gary Kretlow

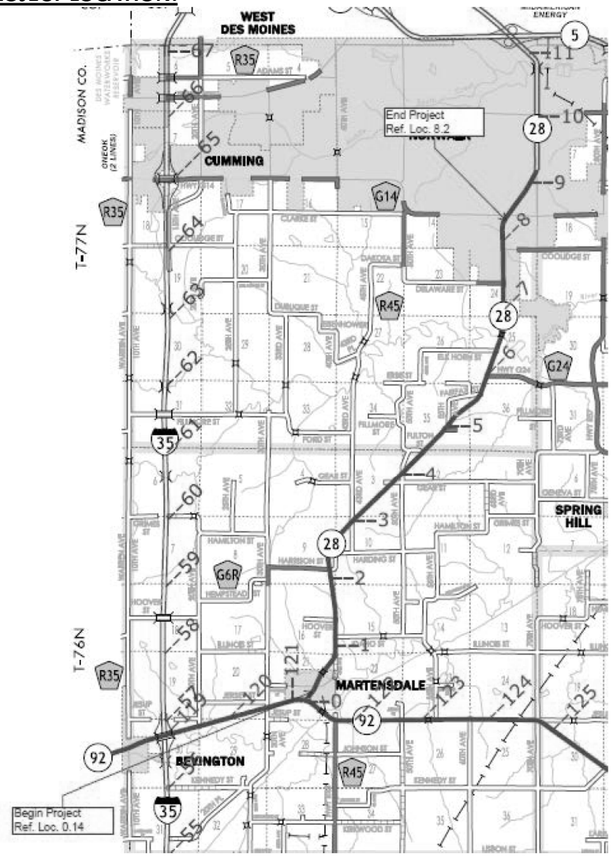
OFFICE: District 1

SUBJECT: FY 2023 3R Concept Statement - **FINAL**

DATE: October 26, 2021

COUNTY: Warren County
PROJ. NO.: STP-028-1(16)--2C-91
PIN: 22-91-028-010
FOLDER: ProjectWise Link

PROJECT LOCATION:



PROJECT DATA:
ROUTE: IA 28
LENGTH: 8 Miles
PLANNING CLASSIFICATION: Access Route
MAINTENANCE SERVICE LEVEL: B
NHS ROUTE: No
TRAFFIC: Current Year: 4200 ADT with 7% Trucks
Design Year: 5300 ADT with 7% Trucks

PURPOSE AND NEED:
IA 28 is the emergency detour for I-35 traffic between IA 92 and the IA 5 bypass. With multiple construction projects and incidents in this stretch of I-35 over the last 5 years, IA 28 has seen additional traffic that has deteriorated the surface.

FEASIBLE ALTERNATIVES:

ITEM#	ITEM DESCRIPTION		UNITS	QUANTITY	UNIT PRICE	TOTAL
HMA Mill and Fill (3" Scarification, 3" Overlay)-3R Funding						
1	1" SCARIFICATION		SY	112,700	$ 2.00	$ 225,400.00
2	4" HMA RESURFACING (24' x 4")		TON	24,500	$ 32.00	$ 784,000.00
3	ASPHALT BINDER		TON	2240	$ 450.00	$ 1,008,000.00
4	CLASS 13 EXCAV, WIDENING		CY	2200	$ 17.00	$ 37,400.00
5	GRANULAR SHOULDERS, TYPE B		TON	3100	$ 25.00	$ 77,500.00
6	CENTERLINE RUMBLE STRIPS, HMA		STA	400	$ 12.00	$ 4,800.00
7	LONGITUDINAL SUBDRAINS		LF	44300	$ 10.00	$ 443,000.00
8	PAINTED PAVEMENT MARKINGS		STA	1,400	$ 11.00	$ 15,400.00
9	TRAFFIC CONTROL		LS	1		$ 69,300.00
10	MOBILIZATION		LS	1		$ 50,000.00
					SUBTOTAL	$ 3,178,300.00
	Contingency				5%	$ 159,000.00
					TOTAL-3R Funds	**$ 3,337,300.00**
HMA Paved Shoulders						
1	4' PAVED SHOULDER, HMA, 6" THICK		TON	12900	$ 35.00	$ 451,500.00
2	MILLED RUMBLE STRIPS, HMA		STA	800	$ 15.00	$ 12,000.00
					SUBTOTAL	$ 463,500.00
					Project Total	**$ 3,800,800.00**

3" CIP & 3" HMA OVERLAY						
ITEM#	ITEM DESCRIPTION		UNITS	QUANTITY	UNIT PRICE	TOTAL
1	CIPR ASPHALT PAVEMENT, 3"		SY	112,700	$ 1.60	$ 180,320.00
2	ASPHALT STABILIZING AGENT (F.A.)		TON	380	$ 450.00	$ 171,000.00
3	HMA RESURFACING (32' x3" THICK)		TON	24,500	$ 32.00	$ 784,000.00
4	ASPHALT BINDER		TON	1,840	$ 450.00	$ 828,000.00
5	CLASS 13 EXCAV, WIDENING		CY	6,300	$ 17.00	$ 107,100.00
6	GRANULAR SHOULDERS, TYPE B		TON	3,000	$ 25.00	$ 75,000.00
7	LONGITUDINAL SUBDRAINS		LF	42,300	$ 10.00	$ 423,000.00
8	PAINTED PAVEMENT MARKINGS		STA	1,400	$ 11.00	$ 15,400.00
9	CENTERLINE RUMBLE STRIPS, HMA		STA	400	$ 12.00	$ 4,800.00
10	TRAFFIC CONTROL (Flaggers/Pilot Cars)		LS	1		$ 248,000.00
11	MOBILIZATION		LS	1		$ 50,000.00
					SUBTOTAL	$ 3,122,580.00
	Contingency				5%	$ 156,200.00
					TOTAL-3r Funds	**$ 3,278,780.00**
HMA Paved Shoulders						
1	4' PAVED SHOULDER, HMA, 3" THICK		TON	6,200	$ 35.00	$ 217,000.00
2	MILLED RUMBLE STRIPS, HMA		STA	800	$ 15.00	$ 12,000.00
					Subtotal	$229,000
					Project Total	**$3,507,780**

RECOMMENDATIONS:
It is recommended to use option B as a cost effective rehabilitation. Four foot paved shoulders and paved shoulders at the guardrail will be included.

FUNDS PROGRAMMED:
This project is programmed in Fiscal Year '23 with $3,532,500.

PROJECT IMPACTS:
Designed by: Consultant

Design Impact	Assistance Requested (Y/N)	Remarks
ADA:	N	
Agreements/Notification Letters:	Y	Warren County and cities of Norwalk and Martensdale
Bridges and Structures:	Y	Bridge Recommendations
Consultant:	Y	Final plans to be done by Consultant
Contracts:	N	
Design/Methods:	N	
Location and Environment:	Y	Desktop Review
Maintenance: (Martensdale)	Y	Need updated pipe inventory
Project Management:	N	
Railroad:	N	

RCE: (Chariton)	Y	Chariton RCE to get patching, clearing and grubbing, and guardrail quantities for final plans
Right of Way:	N	
Soils:	Y	Soils Recommendations
Survey/Photogrammetry:		
Systems Planning:	N	
Traffic and Safety:	Y	Safety Funds to be used for paved shoulders
Utilities:	Y	Review Slide/Erosion area for utilities
Other:		

CONCEPT ANALYSIS & SUPPORTING DATA:

Necessary supporting data may be linked in the analysis to ProjectWise.

Date of Field Review:
May 18th, 2021

Participants:
Todd Netley-Martensdale HMS
Gary Kretlow-District 1 Traffic Tech

PAVEMENT:

Existing Conditions:
The current IA 28 pavement is distressed and has multiple horizontal and vertical along the surface. The current IRI is 148.

Pavement History:
See attached sheets.

PMIS Data:
See attached sheet.

Pavement Design & dTIMS Recommendation:
The pavement determination was 3" of structure. The dTims map shows a recommendation of CIP in FY'23.

There are existing right turn lanes, in which the resurfacing is to be considered at:

- PCC pavement at Southbound, Delaware St. Milepost 7.39 (Sta 390+20 +/-)
- HMA pavement at Northbound, G24, Milepost 5.95 (Sta 311+57 +/-)

Subdrains:
Currently IA 28 has 50% coverage of IA 28 within the project limits. To get to 100%, approximately 30,000 lineal feet will be needed.

Patching/Curb Repairs:
From construction/maintenance with possible tabulation filled out or rough estimate.

ADA/Sidewalk/Trails:
Identify ADA ramps, sidewalk and trail impacts.
Complete Streets analysis determined not to include new trails.

SAFETY:

3R Design Criteria:

Acceptable Values for 3R Roadway Features						Project Values
DESIGN ELEMENT	FREEWAY	NON-FREEWAY				
Regulatory Speed (mph)	65/55	55	45	35	25	**55**
Minimum Vertical Curve (mph)	65/55	35	25	15	5	**35**
Maximum Horizontal Curve (degrees)	3	6	8	14	28	**6**
Maximum Gradient	3%	6%	7%	10%	13%	**6%**
Lane Width (feet)	12	12	11	11	11	**12**
Parking Lane Width (feet)	--	--	8	8	8	**N/A**
Shoulder Width (feet)	10/6	6	4	4	2	**6**
Foreslopes	3:1	3:1	3:1	--	--	**3:1**
Transverse Slopes	6:1	6:1	6:1	--	--	**6:1**
Horizontal Clearance (feet)						
Bridge Width	Approach Lanes + Shoulder Width			Approach Lanes + Offset		
Vertical Clearance - Over NHS (feet)	16.5	16.5	16.5	16.5	16.5	**16.5**
Vertical Clearance - Over Local (feet)	14.5	14.5	14.5	14.5	14.5	**N/A**

Crash Analysis:
ICAT quick report with 5 year crash history summary. W:\Highway\District1\Design\District 5 Concepts\Warren28\Crash

Corridor Crash History:
There were 63 total crashes between January 1, 2016 to December 31, 2020. Of the 63, 31 were animal related. 13 of the crashes were suspected minor or possible injury. The next major cause after animal was 8 run off the road right crashes. There were zero fatalities.

Intersection Crash History:
IA 28 and G24 is a Tier 2 intersection on the PCR Intersection website. It has a PCR of .10 for all crashes.

Intersection Analysis:
Need to review the radii at the intersection of G24 and IA 28. May need to improve the northeast corner of this intersection.

Additional Safety & Operation Considerations:
DRSP is recommending paved shoulder and rumble strips along IA 28. Safety funds will pay for this part of the project.

STRUCTURES and DRAINAGE:

Bridges:

FHWA No.	Maint. No.	Size/Type	Year Built	BDO/Rehab Year	Bridge Rail Height	End Post Type	Vertical Clearance	Future Projects
51041	9100.5S028	34'x40' Slab	1927	1983 Recon 2017 Deck Seal	33"	Vertical face	N/A	None planned
51051	9106.6S028	238'x40' Prestressed	1983	Approaches in 2018	33"	Vertical Face	N/A	None Planned

Bridge over drainage ditch MP 0.5 (Br. Maint. No. 9100.5s028, FHWA 051041) (Sta 28+33.5)
Has existing w-beam guard rail with RE-52. Replace the guard rail and place paved shoulders per Typical 7157.
Stop HMA overlay 30 ft from South, near, bridge end and 45 ft from north, far end. UAC the PCC bridge approaches.
Bridge rail height 2'-9" (min. 32" required for guardrail)

North River Bridge MP 6.6 (Br. Maint. No. 9106.6S028, FHWA 051051) (Sta 349+89.4 +/-)
UAC existing symmetrical thrie beam guard rail. Good. Stop HMA overlay 70 ft from bridge ends. UAC the PCC bridge approaches.
Existing Bridge rail height 2'-10" (min. 32" required for guardrail)
Bridge recommends a splash pad under the deck drain at this bridge.

Culverts/Pipes:
There are 5 pipes in the culvert inventory that have remarks of poor or needing work on the inlet and/or outlet. Here is a link to the inventory. W:\Highway\District1\Design\District 5 Concepts\Warren28\Culverts.xlsx

Existing stockpass can be plugged and abandoned (5'x7'x36') at Milepost 5.73 (Sta 302+70).

Consider culvert extensions with pipe and pipe collar. There are narrow shoulder, Type 3 object markers at existing culvert ends: Record Drawing: 1933 paving NRM-415AC.pdf

Existing 4 Type 3 object markers, Milepost 5.72 (Sta 302+40) North of Fairfax St., Exist 2'x2'x44' RCB, Extend with 30" dia, both sides 2005 Equivalent pipe RCB .pdf

Existing 2 Type 3 object markers, Milepost 1.69 (Sta 88+65) North of Hoover St., Exist. 5'x5'x42' RCB Extend with 66" dia, both sides

Existing 2 Type 3 object markers, Milepost 1.19 (Sta 63+44) North of Idaho St., Exist 4'x4'x64.9' RCB Extend with 54" dia, both sides.

Guardrail:
Provide all available information including height. Here is a link to the inventory spreadsheet.
W:\Highway\District1\Design\District 5 Concepts\Warren28\TrafficBarrier - Steel Beam Guardrail.xlsx

Drainage District:
No known drainage districts within the project limits.

PROJECT IMPACTS:

Impacts Map:
Includes all Office of Location and Environment Hotspots, Outstanding Iowa Waters, railroad crossings, bridge numbers, major utilities, etc.

Environmental:
Clearing and grubbing will be required within the project limits. Chariton RCE will need to tabulate locations by January 1, 2022.

TSMO/Traffic Control:
IA 28 traffic will be maintained at all times via flaggers and/or pilot cars.

ROW:
No right of way needs are anticipated, but an easement may be needed for the slide repair in Norwalk.

Agreements/Notification Letters:
Agreements may be needed with Warren county and the city of Norwalk. Norwalk and Martensdale will need a notification letter.

Project Coordination:
There is a slide repair to do within this project at MP 7.89. The Soils office has reviewed this and estimated $20,000 for the repair and survey will be required.

Previous Projects List:

NRH-NRM-415ABC	1934	7" PCC Construction
P-1023	1952	4" HMA overlay
P1023	1956	4" HMA overlay
MP-5718-69	1977	
STP-28-1(9)—2C-91	1995	4" HMA Overlay

FEASIBLE ALTERNATIVES & RECOMMENDATION:

FEASIBLE ALTERNATIVES:

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					Subtotal	$229,000
					Project Total	**$3,507,780**

RECOMMENDATIONS:

It is recommended to use option B as a cost effective rehabilitation. Four foot paved shoulders and paved shoulders at the guardrail will be included.

FUNDS PROGRAMMED:

This project is programmed in Fiscal Year '23 with $3,532,500.

Development Schedule:

Development schedule will be completed by District 5 after final concept.

Cc:

M. J. Dillavou
K. D. Nicholson
M. Nop
S. Majors
D. L. Newell
W. A. Sorenson
A. A. Welch
B. Hofer
S. J. Gent
K. K. Patel
D. R. Claman
C. Brakke
S. McElmeel
C. Purcell
S. J. Megivern
M. A. Swenson
A. Poole
B. Bradley
E. C. Wright
J. Harris
J. Vortherms
S. Anderson
S. Godbold
S. Neubauer
T. Hanson
J. R. Webb
M. J. Kennerly
J. S. Nelson
R. A. Younie
K. Brink
J. W. Laaser-Webb
M. E. Ross
C. C. Poole
G. Cagle
D. Stokes
S. Seivert
M. Buttz
F. Todey
B. Beavers

Warren County Project Number Date 6/18/2021

B. Lauderman
J. Woodcock
H. Torres-Cacho
J. R. Phillips
B. M. Clancy
D. E. Sprengeler
J. Garton
B. Porter
J. Schmitt

PMIS Section Report

PMIS Key: 02831000 00007 8591

National Highway System: Y | County: 91 | Begin Milepost: 000 00 | Direction: 1
Tested Section: | Route: 28 | End Milepost: 007 85 | PMIS Year: 2018
Section Description: From INT IA 28/IA 92 North To SCL Norwalk

Location:
- District:
- Total Lanes: 2
- Median: N
- Urban Area Code: 71
- City Number: 4805

Construction:
- Constructed: 1934
- Resurfaced: 1995
- Surface Treatment: / AC
- Pavement Type: 3
- Speed Limit: 55

Surface:
- Type:
- Multi Surface: Y
- Width (ft): 24
- Thickness (in): 16
- Widened Drive Lane:

Shoulders and Curb (Left/Right):

Type:	E	/ E
Width (ft):	3	/ 3
Thickness (in):		/
Tied:	N	/ N
Curb and Gutter:	Y	/ N
Curb:		
Dropoff		

Planning:
- Planning Class: 4
- Special Section:
- PCI:
- Program Year:
- Program Comments:
- PIN:

Subdrains:
- Project Number: STP-28-1(9)--2C-91
- Percentage: 83
- Multiple Subdrain

Field Survey:
- Structural Number:
- IRI: 148.84 /
- Friction: 46 /
- FWD Test Date:
- Road Rater Test Date:

Relative Indexes:
- IRI:
- Crack and Patch:
- RDR:
- RPI:
- Coverage (%) 99

Road Rater:
- Average Struct Rating: 4.09
- Average K Rating: 157
- Thickness (in): 16
- 80% Structural Rating: 3.13
- Ave Struct Rating At Joints:
- Relative Strength Ratio:

Crack and Patch:
- Default:
- Provider:
- Test Date: 6/7/2017 12:00:00 AM
- Rut Depth: 0.26
- Faulting: 0.3 /
- PatchA (Bad): 31
- PatchA (Good): 2
- Patches: 1

	High	Medium	Low
LCrack	97	415	257
LCr WP	8	3,231	373
TCrack	12	317	135
AlligC	0	2	7
DCrack	0	0	
Jspall	0	0	

Construction:

	Year	Project Number	Type	Surface	(in)	Base	(in)	SubBase	(in)
1	1995	STP-28-1(9)--2C-91		AAC	2	BAC	2		
2	1977	MP-5718--69		AAC					
3	1956	P-1023(1)		AAC	2	AAC	2		
4	1952	P-1023*<1>		BAC	2	TBB	2		
5	1934	NRH-NRM-415ABC		PC7	7				
6									
7									
8									

	Agg Source	Agg Type	Class	Removal	(in)	Remarks
1	AMES MINE	C.LST.		MIL	1	
2						
3	WINTERSET	C.LST.				
4						
5	WINTERSET LST.	C.LST.	1			SOME DSM GR.=2
6						
7						
8						

Asphalt Age Rating: Agg Rating:

Maintenance:
- Service Level: B
- Maintenance District: 5
- Area: 6
- Garage:
- Fed Func Class: 4
- Concurrent Routes: /

Traffic Count:
- Year: 2018
- AADT: 3,284
- Trucks: 257
- Percent Trucks: 8

ESALS:
- Predicted Lifetime:
- Annual:
- Accum Since Resurf:
- Accum Since Constr:
- Percent Life Used:

Kmpoints:
- Base Rec Begin:
- Base Rec End
- Trav Way Begin:
- Trav Way End:
- BR Route:
- Length:

Coordinates:
- Begin X:
- End X:
- Begin Y:
- End Y:

Longitude / Latitude:
- Begin LONG:
- End LONG:
- Begin LAT:
- End LAT:

Base Records:
- Begin Sequence: 2018
- End Sequence: 3284

Roadway				
PIN Number	22-91-028-010		**Submittal Date**	03/11/22
Project Number	STP-028-1(16)--2C-91			**Approval Date**
District	District 5	**Assistant District Engineer**	Steven McElmeel	
County	Warren		**or**	
Route	IA 28	**Office Director**		
Location	0.1 mi N of IA 92 to 0.2 mi S of W North Ave in Norwalk			
Work Type	HMA RESURFACING / COLD-IN-PLACE RECYCLING			
Segment Manager	Jason Holst			
Designer	Jonathan Bahr			

Design Manual Section 1C-1
Last Updated: 04-29-19

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	60
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	8% (note 1)
Design lane width (ft)		12	12	12
Full depth paved width (ft)		12	12	12
Right turn lane (ft)		12	10	12
Climbing Lane (ft)		12	12	n/a
Left turn lane (ft)		12	10	n/a
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	3%
	Crown break at centerline	4%	4% maximum	4%
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	6" standard (note 2)
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	n/a
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	3:1 (note 3)
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	0.5" per foot (to center of ditch)
	Curbed roadways	2%	not steeper than 3:1	2% (note 2)
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	1.5:1 (note 4)
Transverse Slopes	w/ drainage structures	8:1	6:1	unknown (note 5)
	w/o drainage structures	10:1	6:1	unknown (note 5)
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	unknown (note 6)
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	n/a
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	n/a
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	40'
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	n/a
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	n/a
	Over railroad	23.3	23.3	n/a
	Sign trusses and pedestrian bridges	17.5	17	n/a
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	n/a
Level of Service		B	B	B

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)

Note 1: Record Drawings (1935) indicate IA 28 was constructed with a maximum superelevation rate of 8%. Resurfaced roadway shall match existing superelevation rate.

Note 2: Existing Curb is located only on sidestreet and driveway returns with the Corporate Limits of Norwalk. IA 28 does not include any curb within the project limits.

Note 3: Record Drawings (1935) indicate IA 28 was constructed with a foreslope of 3:1. 1994 As-Builts indicated foreslopes adjacent to turn-lanes were constructed at 4:1 slopes.

Note 4: Record Drawings (1935) indicate IA 28 was constructed with a backslope of 1.5:1.

Note 5: Record Drawings do not indicate the existing Transverse Slopes. Transverse Slopes will not be impacted by this project.

Note 6: Record Drawings do not indicate the depth or width of existing dithes, only that they had a 2' mi width. Ditches will not be impacted by this project unless there is 'reshaping' to bring them to their original condition.

Design year ADT = See Note 8.

Design Manual Section 1C-1
Last Updated: 04-29-19

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	6 (note 7)
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	n/a
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	n/a
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	4' paved, 2' granular (note 8)
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

*Requires safety edge-Refer to Section 3C-6

Curbs should be located beyond the outer edge of the effective shoulder width in rural areas

Refer to Section 3C-2 for curb offsets in urban areas

Notes:

Note 7: Existing Turn Lanes with Shoulders are only with the Corporate Limits of Oskaloosa. The existing shoulders a granular.

Note 8: 4' Paved Shoulders are being installed with this project in place of existing granular shoulder. What's left of the the existing granular shoulders will be topped with granular material to bring the granular shoulder up to the new roadway profile elevation and to bring the gravel shoulders back to a standard 4%-6% slope.

IA 28 is NOT a NHS route and has a 2042 Design Year ADT of 6,033 VPD.

D2 Questions for District 5:
Date 3/11/2022

1. PROJECT LIMITS
    a. Beginning of Project is at transition from PCC to HMA, 0.13 miles north of the intersection of IA 92 and IA 28. Please verify.
    b. End of Project is at transition from HMA to PCC, 0.17 miles south of the intersection of IA 28 and North Avenue. Please verify.

2. FUNDING DIVISIONS
    a. Should the area of the unincorporated town(s) south of Norwalk (Prole) be included in the Urban Funding Division?
        i. If these town(s) should be included in the Urban Funding Division then pinpoint those limits. No limits were designated limits in the Mahaska County Assessor's GIS map and signs could not be found in Google Streetview.
    b. The 'Additional Safety & Operation Considerations' Section on Page 6 of the Project Concept states: "DRSP is recommending paved shoulder and rumble strips along IA 28. Safety funds will pay for this part of the project." Are safety Funds required for the shoulder work and guardrail (it does not appear that a parallel HSIPX Safety project was setup)?

3. COLD IN-PLACE RECYCLING
    a. Does the District want the 4" Cold-In-Place Recycling at Tapers and Turning Lanes? There was previous discussion regarding whether the Cold-In-Place train could be setup to complete these operations. Discuss alternatives if CIR cannot be used at Tapers and Turning Lanes. Below is a list of the only Turn Lanes within the Project cooridoor:
        i. HMA pavement at Northbound Right Turn Lane, G24, Milepost 5.95 (Sta 315+67).
        ii. PCC pavement at Southbound Right Turn Lane, Delaware St., Milepost 7.39 (Sta 389+86.3).
    b. Instead of 24' of 4" Cold-In-Place Recycling, would the District prefer what was specified from Morning Sun to US 61 on the IA 78 (19)(10) Henry/Louisa County Project (STP-078-4(19)--2C-44 / HSIPX-078-5(10)--3L-58, PW: 4407801009)? The IA 78 (19)(10) Henry/Louisa County Project featured milling off 4" of 24' wide existing pavement AND 8' gravel shoulder (4' each side) and put back 3" of CIR over the 24' traveled way and new 4' paved shoulders (8' total). The thickness of CIR placed back on IA 28 would be the same as what was done for IA 78; since the HMA Paved Shoulders on IA 28 are scheduled to be 4' wide. Doing this reduces the net profile gain to 2" (instead of 3") and eliminates the Base Widening bid item.

4. 3" HMA RESURFACING
    a. Page 9 of the Project Concept indicates 4" CIR + 3" HMA Resurfacing. Please confirm the makeup of the 3" HMA Resurfacing. FYI, IA 78 (19)(10) had 1.5" Intermediate Course + 1.5" Surface Course over the top of its 3R.

5. GRANULAR SHOULDER
    a. Shall we assume Granular Shoulder is 1" below existing edge of pavement due to washout?

6. SHOULDER AND CENTERLINE RUMBLES
    a. Should the shoulder and centerline rumbles be skipped in the area of the unincorporated town of Prole? If so, see FUNDING DIVISIONS question above regarding Prole limits.

7. STOCKPILED MATERIALS:
    a. Confirm that Maintenance would like the following Stockpiled Materials:
        i. HMA Millings
        ii. Class 13 Excavation
        iii. Steel Beam Guardrail
        iv. Steel Beam Guardrail Posts
    b. Verify the location of Stockpiled Materials (Primary Location? Secondary location? Is there a preferred distribution of materials across the sites)
        i. Primary Location:
        ii. Secondary Location:
    c. Maintenance Contact Person and Phone Number:

8. CONTINGENCY PERCENTAGES
    a. HMA Pavement Contingency for Irregularities: 5.0% is Typical. Confirm.
    b. Granular Shoulder: 20% has been used on recent projects. Confirm.
    c. Patches Contingency: 15% is Typical. Confirm.

9. LETTING DATE
    a. Letting Date is currently scheduled for 10/18/2022. Road Design Team suggests revising the Letting Date to 11/15/2022 to match the 11/15/2022 Letting Date of FY 2023 Project NHSX-092-5(70)--3H-91 Warren County, which passes by the beginning of this IA 28 Warren County project. This allows for the possibility to Tie the two projects as well as to stagger other District 5 Projects the Road Design Team is working on.

10. LONGITUDINAL SUBDRAINS
    a. Page 5 of the Project Concept indicates that the proposed improvement includes 50% placement of additional subdrains (existing coverage is 50%). Please confirm that the District would like to install the additional 50% of subdrain.

11. SLIDE REPAIR
    a. Page 7 of the Project Concept indicates that “There is a slide repair to do within this project at MP 7.89. The Soils office has reviewed this and estimated $20,000 for the repair and survey will be required.” Will the Slide Repair be added to this project or will it have another Project Number? FYI, the 'ROW' section on Page 7 of the Project Concept suggests that the slide repair may be included in this 3R project since “an easement may be needed for the slide repair in Norwalk.”

12. STRUCTURES
    a. FHWA 51041, Maint. 9100.5S028 (34’x40’ Concrete Slab Bridge, STA 28+33.5, MP 0.5). Discuss possible Repairs and Responsibilities per the NOTE on Page 6 of the Project Concept and the RECOMMENDATION within the Bridge Review Document STP-028-1(16)--2C-91_BSB_ Review.xlsx. The Project Concept and Bridge Review Document appear to conflict.
        i. NOTE on Page 6 of the Project Concept “UAC the PCC bridge approaches.”
        ii. RECOMMENDATION within the Bridge Review Document STP-028-1(16)--2C-91_BSB_ Review.xlsx. “Recommend to repair spalling and cracks on both bridge approaches.”
    b. FHWA 51051, Maint. 9106.6S028 (238’ x40’ PPCB Bridge, STA 349+89.4, MP 6.6. Discuss Coordination. Discuss possible Repairs and Responsibilities per the NOTE on Page 6 of the Project Concept and the RECOMMENDATION within the Bridge Review Document STP-028-1(16)--2C-91_BSB_ Review.xlsx.
        i. NOTE on Page 6 of the Project Concept “Bridge recommends a splash pad under the deck drain at this bridge.”
        ii. RECOMMENDATION within the Bridge Review Document STP-028-1(16)--2C-91_BSB_ Review.xlsx. “Recommend to repair erosion damages on below span#3, left-side of near pier#2 at near abutment. See inspection report photo# 7,8,9 and 10 in SIIMS for inspection date: 3/30/2021."

13. SPECIAL FEATURES
    a. Are there any special features not shown on the plans (Schools or businesses with particular entrance needs, mailboxes, signage, structures, traffic control loops at signalized intersections) that need to be taken into consideration, either design or Traffic Control-wise?
    b. Is there any additional information or District preferences that can be provided regarding the existing stockpass that will be plugged and abandoned (5’x7’x36’) at Milepost 5.73 (Sta 302+70), per page 6 of the Project Concept?

14. SPECIAL EVENTS
    a. Are there any Special Events that need to be identified? If so, what are their schedules?

15. INTERSECTION ANALYSIS
    a. Page 5 of the Project Concept states “Need to review the radii at the intersection of G24 and IA 28. May need to improve the northeast corner of this intersection.” Has this analysis been performed?

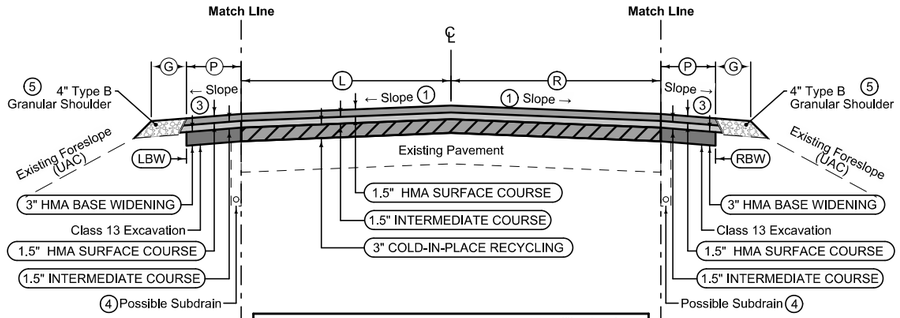
16. EXISTING DRAINAGE PROBLEMS
    a. Are there existing drainage problems within towns or in rural areas that may need to be mitigated (shoulder washout, standing water, etc.)?

17. FIELD MAINTENANCE TABS
    a. Please confirm that the FIELD Tabs (Tree Clearing, patching, curb repairs, culverts, etc.) are pending collection, review, and distribution to Road Design.

18. ADDITIONAL TOPICS TO BE RESOLVED AS THE PROJECT PROGRESSES
    a. Project Coordination
    b. Tied Projects
    c. Pavement Specifications
    d. Traffic Control
    e. OLE Information
    f. City and County Agreements

Combination Shoulder

3R_Shldr_C_Overlay_ Modified					
STATION TO STATION		(P) Feet	(G) Feet	(LBW) Feet	Division
XX+XX	XX+XX	4	2	4	1



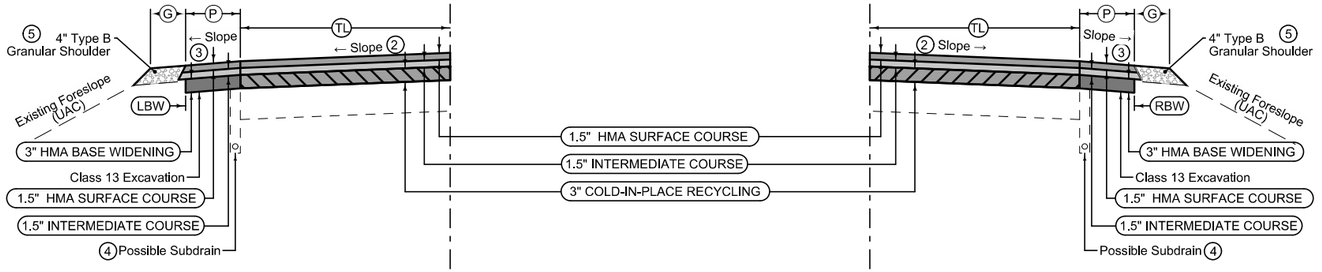
3R_MillingOverlay_ Modified					
STATION TO STATION		(L) Feet	(R) Feet	Division	Remarks
XX+XX	XX+XX	12	12	1	

Combination Shoulder

3R_Shldr_C_Overlay_ Modified					
STATION TO STATION		(P) Feet	(G) Feet	(RBW) Feet	Division
XX+XX	XX+XX	4	2	4	1

Combination Shoulder with Turning Lane

3R_Shldr_C_Overlay_ Modified						
STATION TO STATION		(TL) Feet	(P) Feet	(G) Feet	(LBW) Feet	Division
XX+XX	XX+XX	0-12	4	2	4	1



Combination Shoulder with Turning Lane

3R_Shldr_C_Overlay_ Modified						
STATION TO STATION		(TL) Feet	(P) Feet	(G) Feet	(RBW) Feet	Division
XX+XX	XX+XX	0-12	4	2	4	1

① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.

② Finished slope of Right Turn Lanes shall match existing except the minimum allowable slope is 3% and the maximum allowable slope is 4%. Section may be modified as directed by the Engineer through areas of special shaping.

③ Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.

④ UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-9 on CS sheets for proposed locations).

⑤ The surface of the existing granular shoulder is estimated to be 1.0" below the surface of the edge of the existing pavement.

General Notes:

1. Stationing on typical sections does not include gapping for bridges, sideroads, or entrances. Refer to tabulations and details for precise stationing and quantities.
2. See Tab 100-25 for Pavement quantities.
3. See Tab 112-9 for Granular Shoulder quantities.
4. See Tab 106-5 for Base Widening quantities.

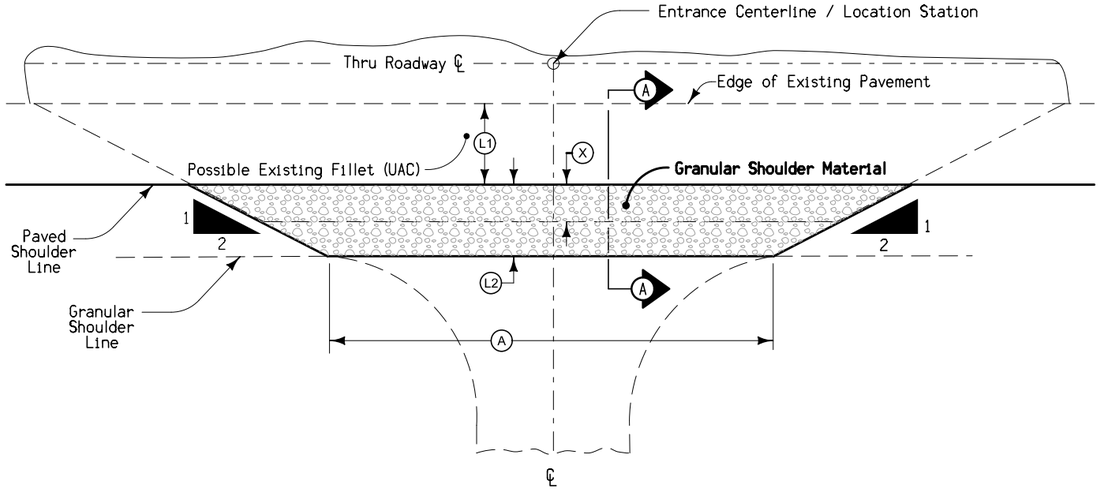
IA 28 Mainline and Shoulders Cold In-Place Recycling & HMA Resurfacing

(Beginning of Project to End of Project)

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER B.1	

7:28:34 AM 3/11/2022 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9102801022\Design\CADD_Files\Sheet_Files\SHT_91028016_B01_B06.dgn

7117-M
Modified



PLAN

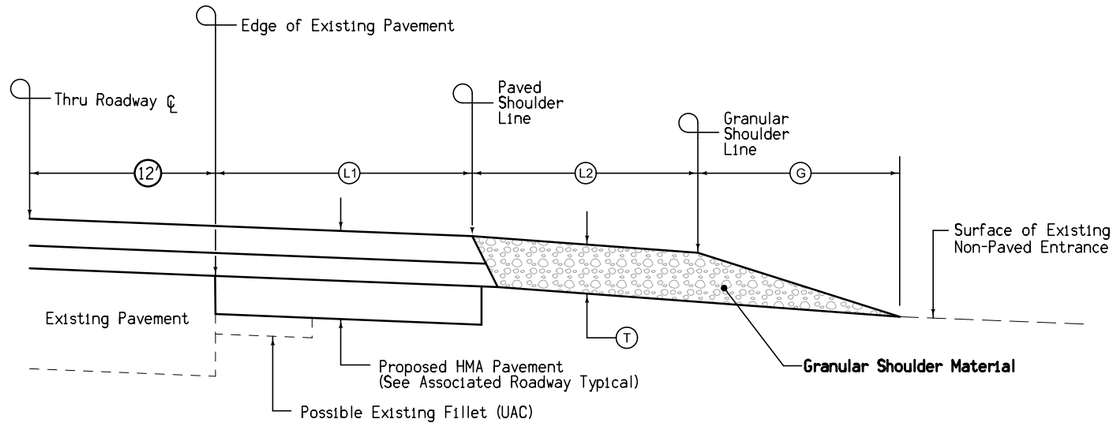
ENTRANCE TABULATION

LOCATION STATION	Side	(A) Feet	(L1) Feet	(L2) Feet	(G) Feet	(T) Inches	(X) Feet	Class 13 Excavation for Fillet Removal (CASE B) CY	Granular Shldr Material for Fillet Replacement (CASE B, 140 lbs/cf) TONS	FUNDING DIVISION
CASE 'A' TABULATION										
XX Entrances	VARIES	XX AVG	X	X	X	X	X	X.X	X.XX	--
CASE 'B' TABULATION										
XX+XX	XX	XX	X	X	X	X	X	X.X	X.XX	DIV. X (IDOT X)
TOTALS, DIV. 1 (IDOT RURAL)								X.X	X.XX	DIV. 1 (IDOT RURAL)
TOTALS, DIV. 2 (IDOT URBAN)								X.X	X.XX	DIV. 2 (IDOT URBAN)

NOTES:

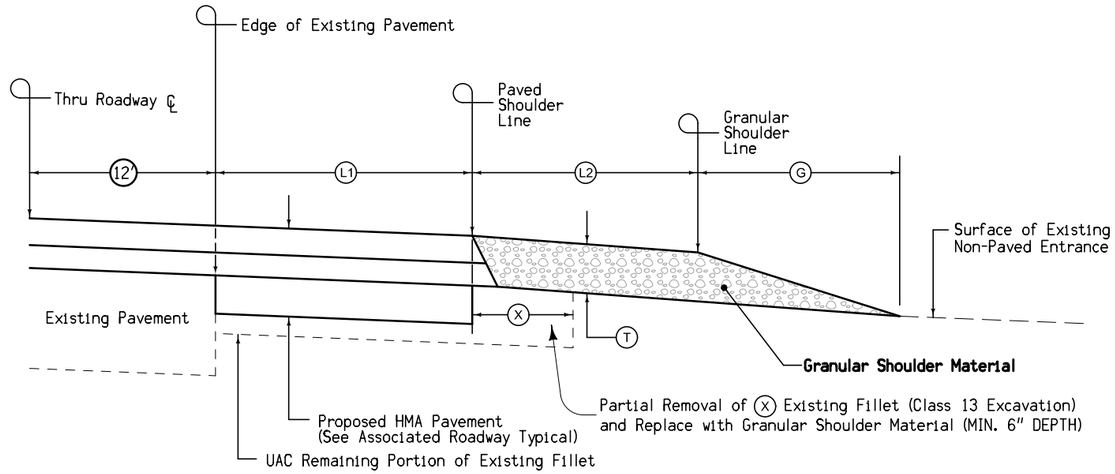
1. **HMA Pavement Quantities associated with Dimension (L1) are included with the Mainline. Refer to Tab 100-25 (HMA Pavement) and 106-5 (Base Widening) on the C Sheets.**
2. **Granular Shoulder Material Quantities associated with Dimensions (L2) and (G) are tabulated on Tab. 112-9 (Shoulders) on C Sheets. Refer to notes on Roadway Typical Sections on B sheets for more information.**
3. **Special shaping of existing surface prior to placement of shoulder may be required by the Engineer and is incidental to other work on the project.**

CASE 'A' - Existing Paved Fillet Less Than or Equal to (L1) (1)



SECTION A-A

CASE 'B' - Existing Paved Fillet Greater Than (L1) (1)

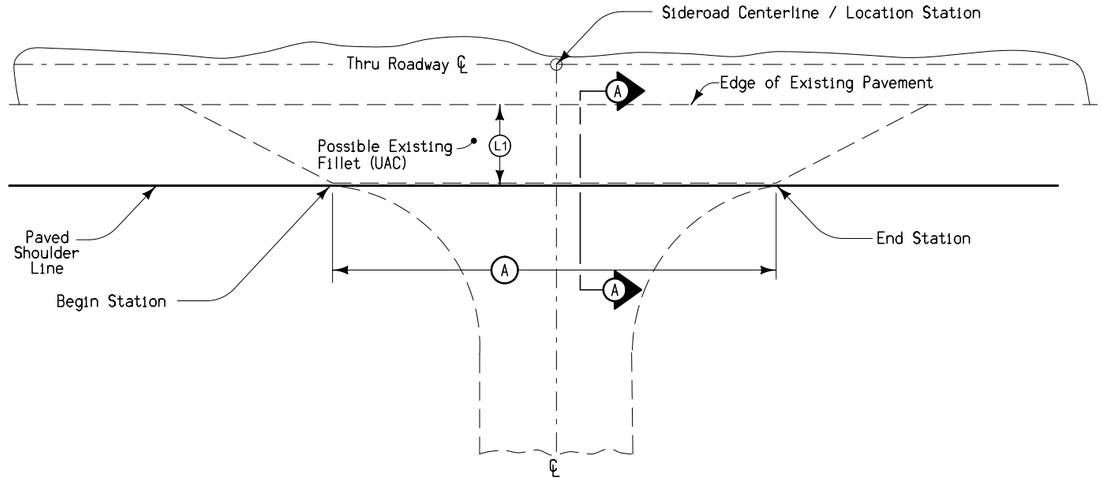


SECTION A-A

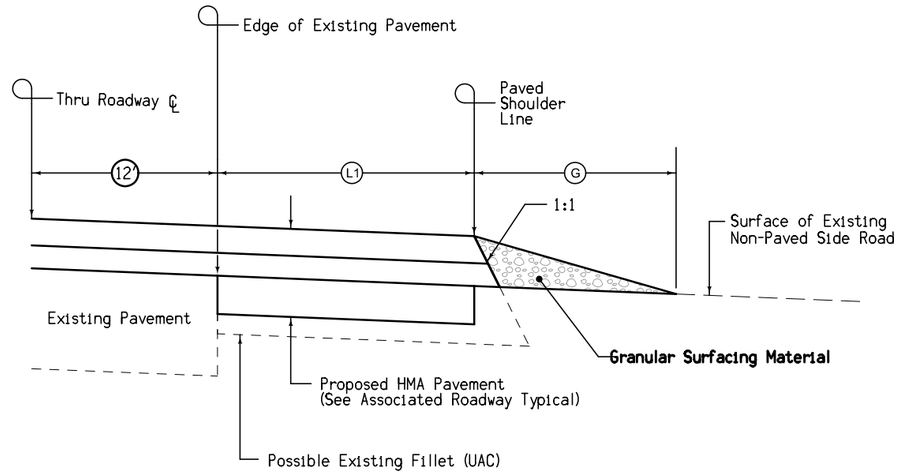
(1) **Existing Fillet Length as measured from the Edge of PROPOSED Thru Lane.**

GRANULAR SHOULDER CONSTRUCTION THRU ENTRANCES

7148-M
Modified



PLAN



SECTION A-A

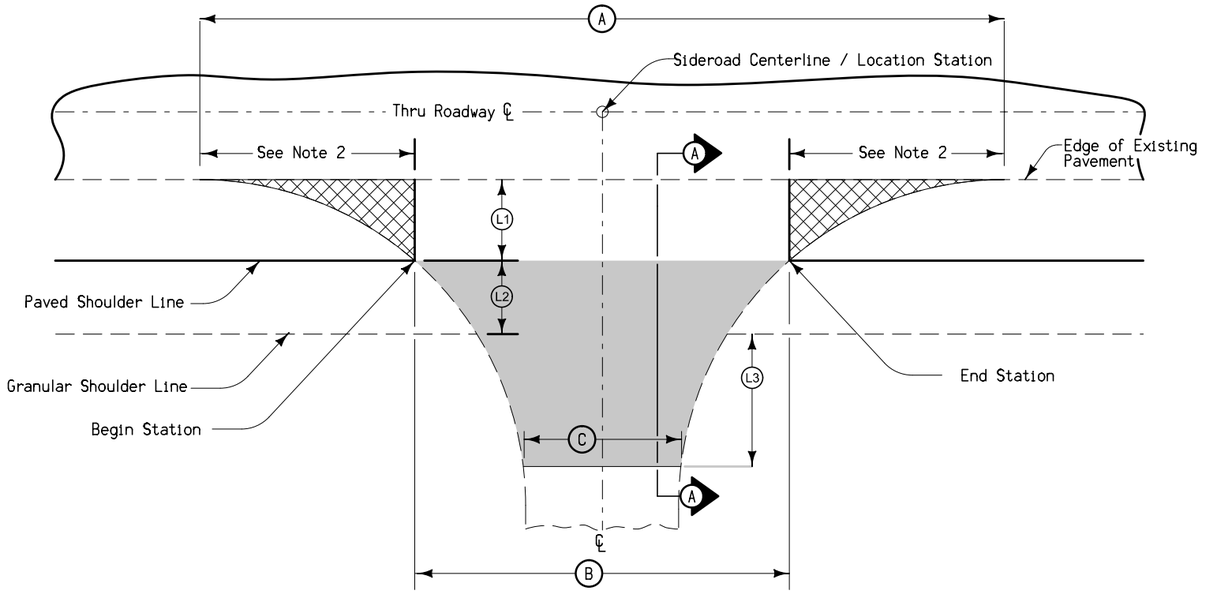
Location	Side	Location Station	Begin Station	End Station	(A)	(L1)	(G)	Granular Surfacing	Funding Division	Remarks
					Feet	Feet	Feet	Tons		
XXX	XX	XX+XX	XX+XX	XX+XX	XX	X	X	X.XX	DIV. X (IDOT X)	
				TOTALS (DIVISION X IDOT X)				XX.XX	DIV. X (IDOT X)	

NOTES:

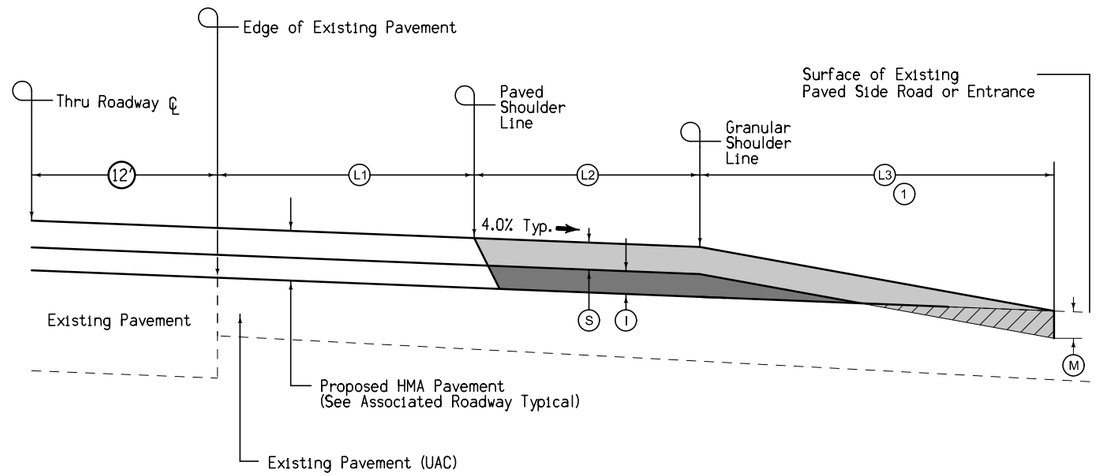
1. HMA Pavement Quantities associated with Dimension (L1) are included with the Mainline. Refer to Tab 100-25 (HMA Pavement) and 106-5 (Base Widening) on the C Sheets.
2. Special shaping of existing surface prior to placement of shoulder may be required by the Engineer and is incidental to other work on the project.

RESURFACING OF PAVED FILLETS AT NON-PAVED SIDE ROADS

7149-M
Modified



PLAN



SECTION A-A

(1) **Refer to Standard Road Plan PR-202 (Notches for Resurfacing) for more information.**

	HMA Pavement Course	Unit Weight	Asphalt Binder Application Rate
(S)	Surface Course	147 lbs/cf	6.0% per ton of HMA Pavement
(I)	Intermediate Course	147 lbs/cf	6.0% per ton of HMA Pavement

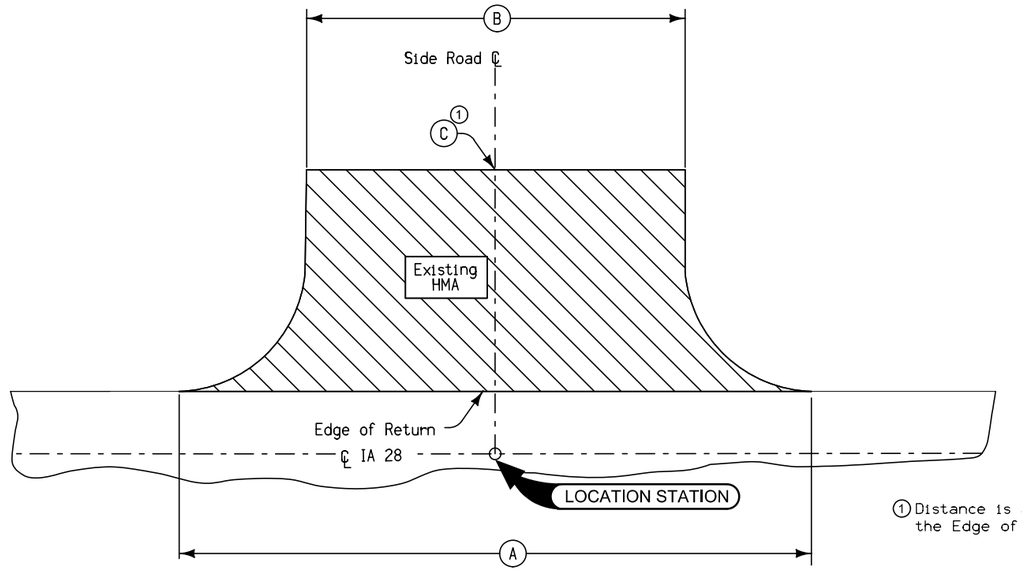
Location	Side	Location Station	Begin Station	End Station	Existing Surface Material	(1) Type of Notch	(A) Feet	(B) Feet	(C) Feet	(S) Inches	(I) Inches	(M) Inches	(L1) Feet	(L2) Feet	(L3) Feet	HMA Pavement: Surface Course, Standard Traffic, 1/2 in. Mix, Friction L-4 Area SY	HMA Pavement: Surface Course, Standard Traffic, 1/2 in. Mix, Friction L-4 Weight Tons	HMA Pavement: Surface Course, High Traffic, 1/2 in. Mix, No Special Fric. Req. Area SY	HMA Pavement: Surface Course, High Traffic, 1/2 in. Mix, No Special Fric. Req. Weight Tons	HMA Pavement: Intermediate Course, Standard Traffic, 1/2 in. Mix Area SY	HMA Pavement: Intermediate Course, Standard Traffic, 1/2 in. Mix Weight Tons	Asphalt Binder: Surface Course PG 58-28S Tons	Asphalt Binder: Surface Course PG 58-28H Tons	Asphalt Binder: Intermediate Course PG 58-28S Tons	Scarification Area SY	Funding Division
XX	XX	XX+XX	XX+XX	XX+XX	XX	NX	XX	XX	XX	X	X	X	X	X	XX	X	X.X	XX	X.X	X	X.X	X.X	X.X	X.X	XX	DIV X (IDOT X)
TOTALS (DIVISION X, IDOT X)																X.X	XX.XX	XX	XX.XX	XX	XX.XX	XX.XX	X.XX	X.XX	X.XXX	DIV X (IDOT X)

NOTES:

1. HMA Pavement quantities associated with Dimension (L1) are included with the Mainline. Refer to Tab 100-25 (HMA Pavement) on the C Sheets. The HMA Pavement quantities within this Detail reflect the work within the shaded regions defined by Dimensions (L2) and (L3).
2. The existing sideroad/entrance pavement outside the limits of Dimension B shall be removed and included in the cost of Class 13 Excavation. Class 13 Excavation and Base Widening (Tab 106-5) shall not occur within the limits of Dimension B.
3. Special shaping of existing surface prior to placement of runout may be required by the Engineer and is incidental to other work on the project.
4. Dimensions are approximate and shall match existing.

HMA RUNOUT FOR PAVED SIDE ROADS OR PAVED ENTRANCES

Sideroad Return



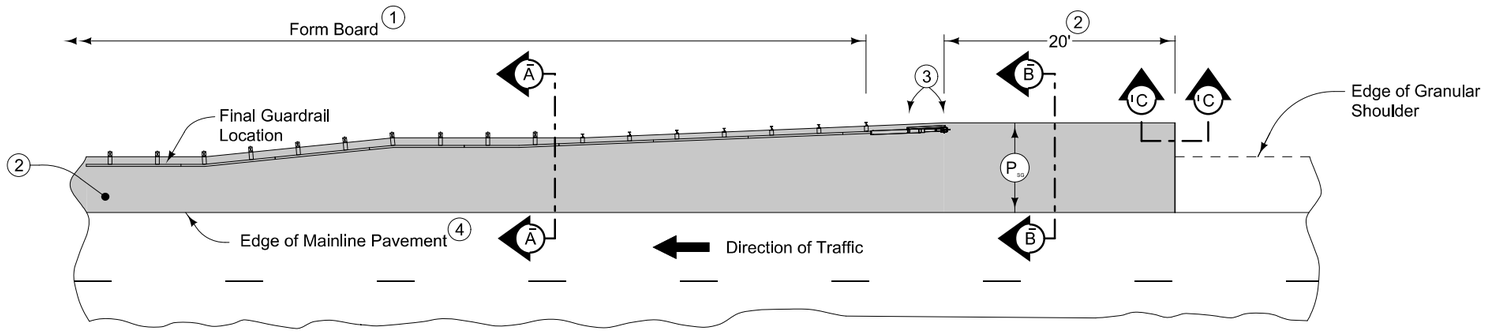
1 Distance is as-measured from the Edge of Return.

Location	Location Station	Existing Surface Material	Type of Notch	A Feet	B Feet	C Feet	MILLING/ RESURFACING SY	REMARKS
XX	XX+XX	XX	NX	XX	XX	XX	XX	Stop Resurfacing at XX

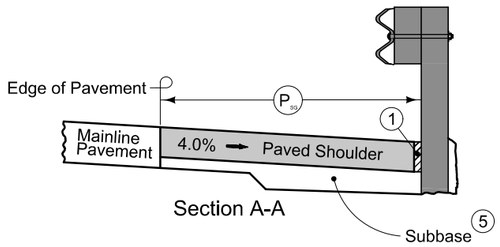
Notes:

1. Dimensions provided are approximate.
2. Refer to Tab 100-25 for Quantities.

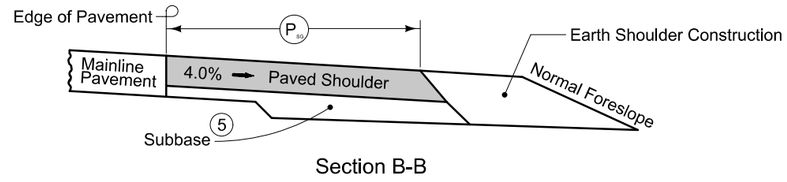
IA 28 SIDEROADS
(Martensdale and Norwalk)



PLAN VIEW

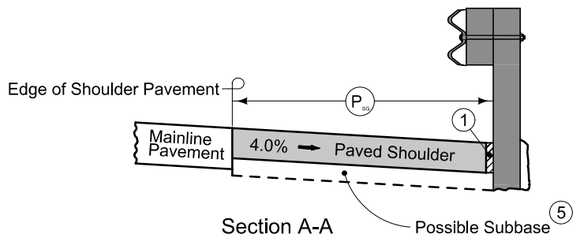


Section A-A

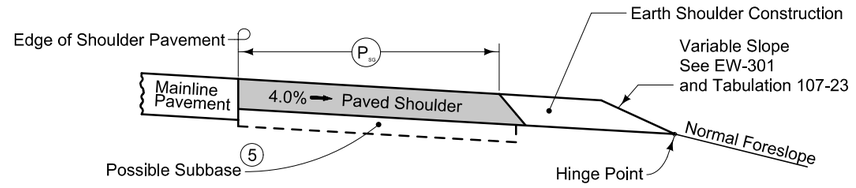


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

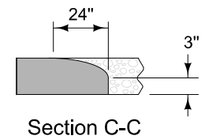
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

(2) Continue paved shoulder 20 feet beyond the center of the first post.

(3) Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

(4) 'KT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

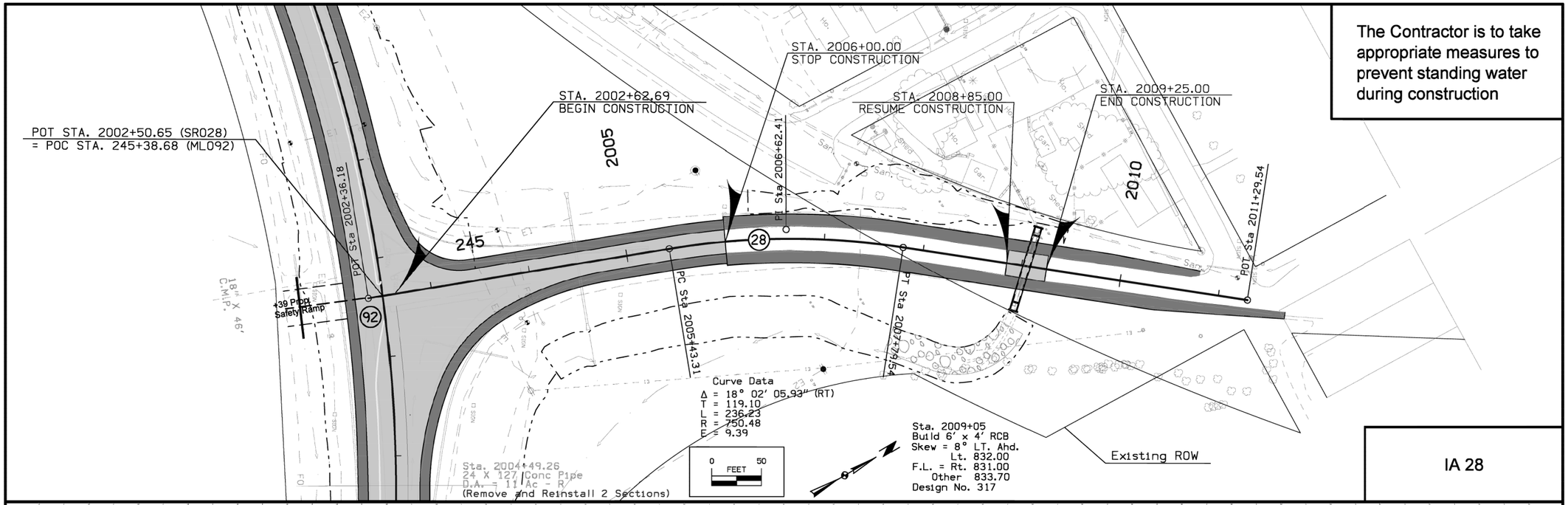
(5) Refer to other details in the plan.

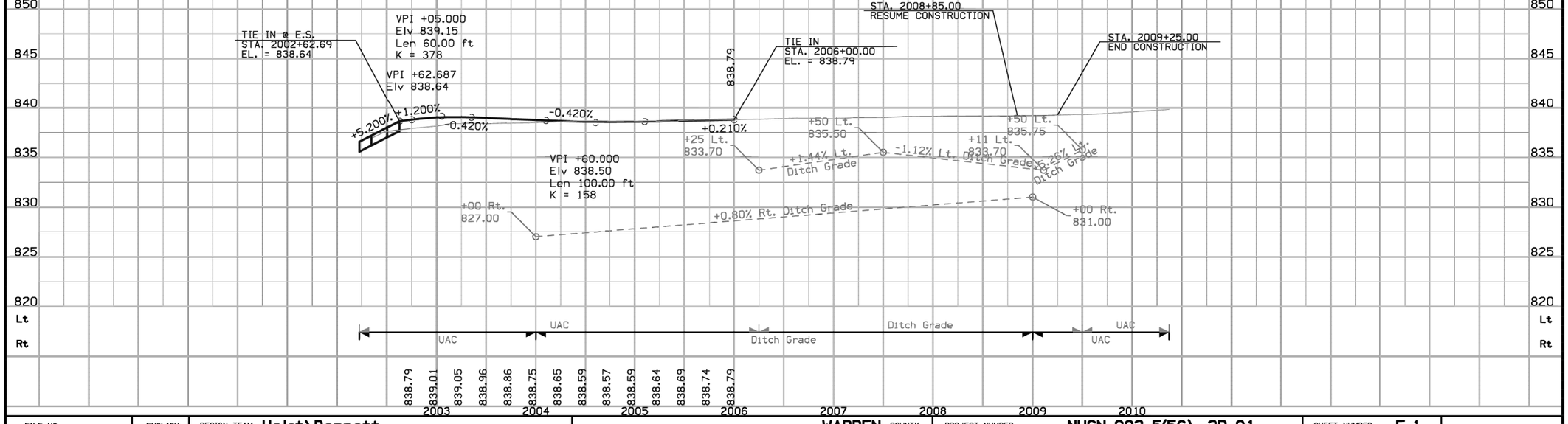


Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

The Contractor is to take appropriate measures to prevent standing water during construction





FILE NO.	ENGLISH	DESIGN TEAM Holst\Bennett	WARREN COUNTY	PROJECT NUMBER NHSN-092-5(56)--2R-91	SHEET NUMBER E.1

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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.1

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FED. ROAD DIST. NO.	STATE	N.R.M. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	415		6	101

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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.2

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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.3

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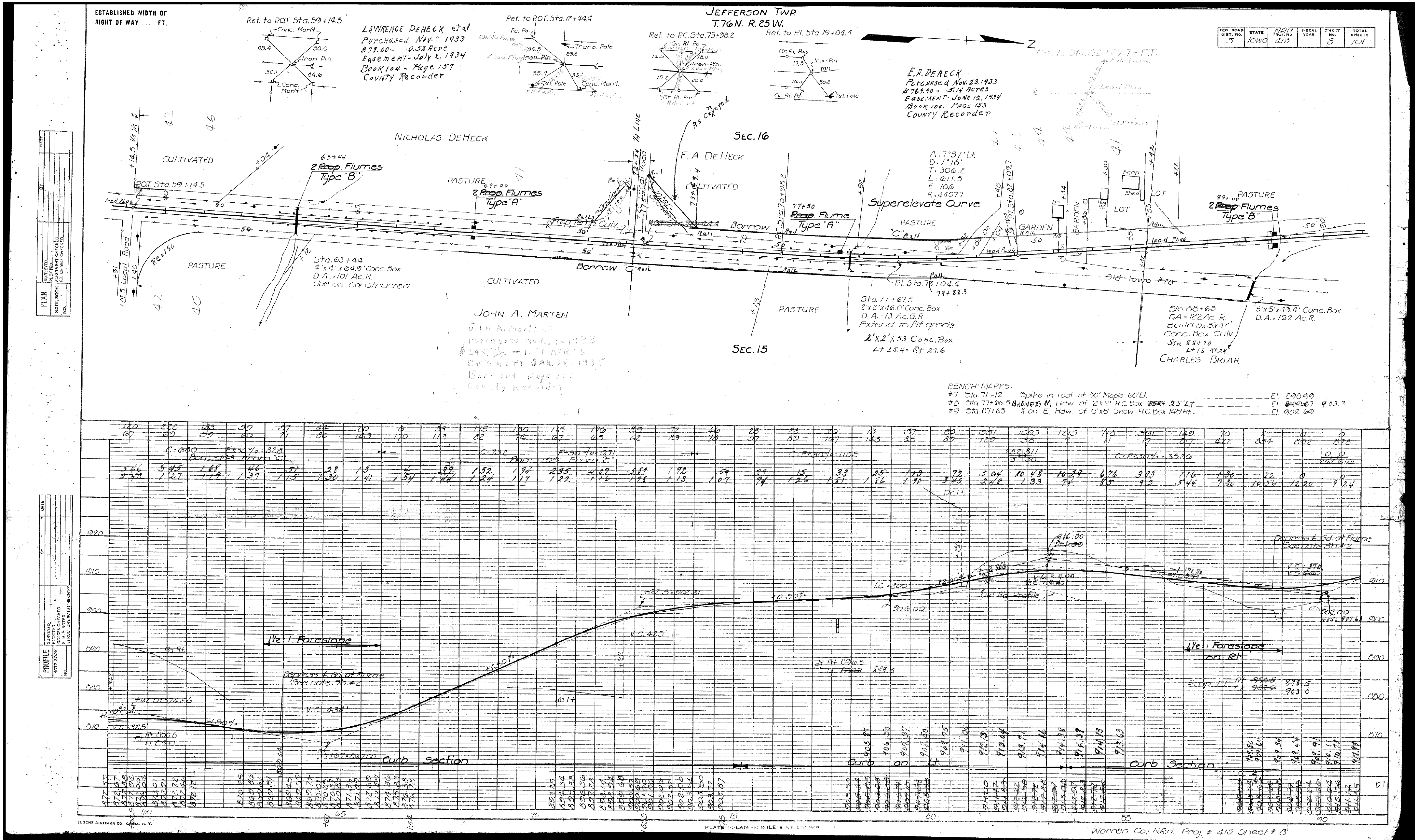
ESTABLISHED WIDTH OF RIGHT OF WAY ___ FT.
JEFFERSON TWP. T.76N. R.25W.
FED. ROAD DIST. NO. 5 | STATE IOWA | NRH PROJ. NO. 415 | FISCAL YEAR | SHEET NO. 8 | TOTAL SHEETS 101
Ref. to P.O.T. Sta. 59+14.5
Ref. to P.O.T. Sta. 72+44.4
Ref. to P.C. Sta. 75+98.2
Ref. to P.I. Sta. 79+04.4
LAWRENCE DEHECK et al
Purchased Nov. 7. 1933
$79.00 - 0.52 Acre
Easement - July 2. 1934
Book 104 - Page 157
County Recorder
E.A. DEHECK
Purchased Nov. 23. 1933
$769.90 - 5.14 Acres
Easement - June 12. 1934
Book 104 - Page 153
County Recorder
NICHOLAS DEHECK
E. A. DEHECK
SEC. 16
SEC. 15
JOHN A. MARTEN
CHARLES BRIAR
CULTIVATED
PASTURE
GARDEN
LOT
2 Prop. Flumes Type "B"
2 Prop. Flumes Type "A"
Prop. Flume Type "A"
Superelevate Curve
Δ 7°57' Lt.
D. 1°18'
T. 306.2
L. 611.5
E. 10.6
R. 4407.7
Sta. 63+44
4'x4'x64.9' Conc. Box
D.A. .101 Ac. R.
Use as Constructed
Sta. 77+67.5
2'x2'x46.0' Conc. Box
D.A. .13 Ac. G.R.
Extend to fit grade
2'x2'x53 Conc. Box
Lt 25.4 - Rt 27.6
Sta. 88+65
D.A. = 122 Ac. R.
Build 5x5x42' Conc. Box Culv.
5'x5'x49.4' Conc. Box
D.A. 122 Ac. R.
Old Iowa #88
P.I. Sta. 79+04.4
BENCH MARKS
#7 Sta. 71+12 Spike in root of 30" Maple 60' Lt. El. 898.09
#8 Sta. 77+66.5 Hdw. of 2'x2' RC Box 25' Lt. El. 903.3
#9 Sta. 87+65 X on E. Hdw. of 5'x5' Skew RC Box 149' Rt. El. 902.69
1½:1 Foreslope
1½:1 Foreslope on Rt.
Depress & Gd. at Flume See note Sh. #2
V.C. 425
V.C. 434
V.C. 325
V.C. 400
V.C. 200
Old Rd. Profile
Curb Section
Curb on Lt.
PLATE 1 PLAN-PROFILE
Warren Co. NRH. Proj. # 415 Sheet # 8

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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.4

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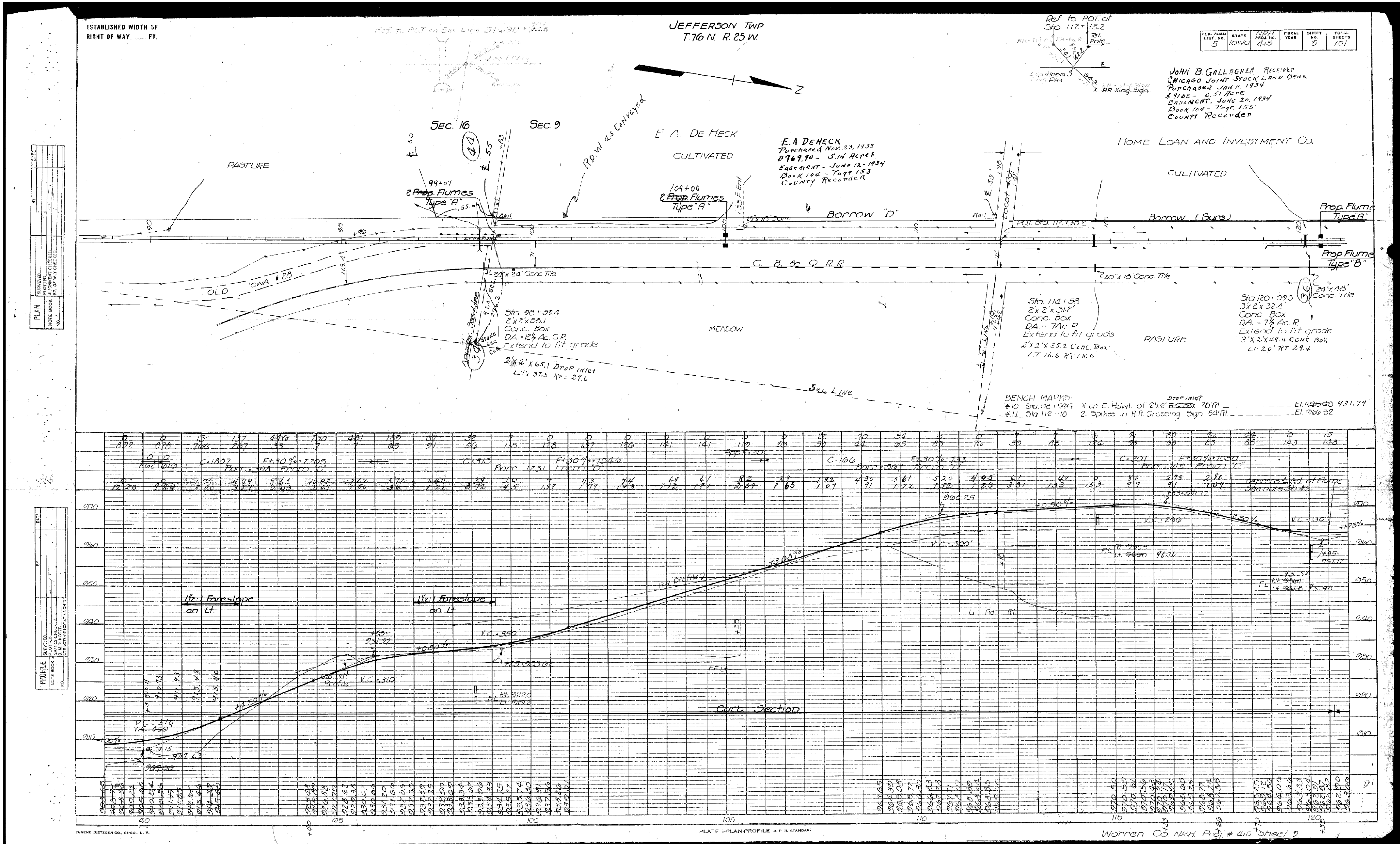

ESTABLISHED WIDTH OF RIGHT OF WAY ...... FT.
JEFFERSON TWP. T.76 N. R.25 W.
Ref. to P.O.T. of Sta. 112+15.2
JOHN B. GALLAGHER, Receiver CHICAGO JOINT STOCK LAND BANK Purchased JAN 11. 1934 $91.00 - 0.51 Acre EASEMENT - JUNE 20. 1934 Book 104 - Page 155 County Recorder
Sec. 16
Sec. 9
R.O.W. as Conveyed
E. A. DE HECK
CULTIVATED
E. A DEHECK Purchased Nov. 23, 1933 $969.90 - 5.14 Acres Easement - June 12 - 1934 Book 104 - Page 153 County Recorder
HOME LOAN AND INVESTMENT CO.
PASTURE
2 Prop. Flumes Type "A"
Borrow "D"
Borrow (Surs)
Prop. Flume Type "A"
Prop. Flume Type "B"
C. B. & Q. R.R.
OLD IOWA #28
20"x 24" Conc. Tile
20"x 18" Conc. Tile
24"x 48" Conc. Tile
Sta. 98+59.4 2'x2'x58.1 Conc. Box DA.=12½ Ac. G.R. Extend to fit grade
2'x2'x 65.1 Drop Inlet Lt. 37.5 Rt. 27.6
MEADOW
Sta. 114+58 2'x2'x31.2' Conc. Box DA.= 7Ac. R. Extend to fit grade
2'x2'x35.2 Conc. Box Lt. 16.6 Rt. 18.6
PASTURE
Sta. 120+09.3 3'x2'x32.4' Conc. Box DA.= 7½ Ac. R. Extend to fit grade
3'x2'x49.4 Conc. Box Lt. 20' Rt. 29.4
Sec. Line
BENCH MARKS:
#10 Sta. 98+59.4 X on E. Hdwl. of 2'x2' Drop Inlet 28' Rt. El. 931.79
#11 Sta. 112+18 2 Spikes in R.R. Crossing Sign 54' Rt. El. 966.52
1½:1 Foreslope on Lt.
1½:1 Foreslope on Lt.
R.R. Profile
Curb Section
V.C.=350'
V.C.=310'
V.C.=300'
V.C.=200'
Worren Co. N.R.H. Proj. # 415 Sheet 9
PLATE - PLAN-PROFILE
EUGENE DIETZGEN CO., CHGO. N.Y.

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON		WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.5

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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.6

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For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.7

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For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.8

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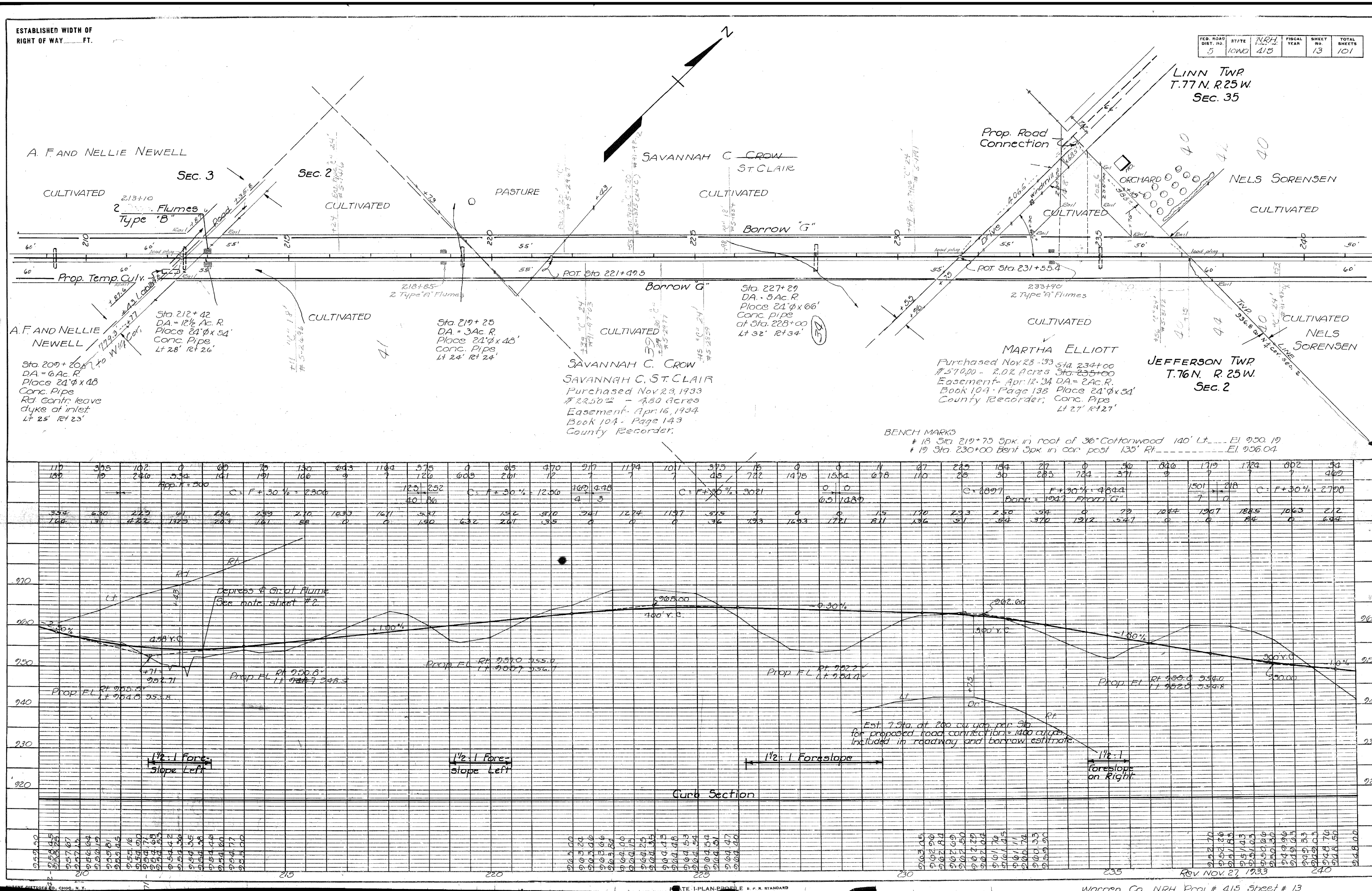
ESTABLISHED WIDTH OF RIGHT OF WAY ___ FT.
FED. ROAD DIST. NO. 5
STATE IOWA
NRH 415
SHEET No. 13
TOTAL SHEETS 101
LINN TWP. T.77 N. R.25 W. Sec. 35
A. F. AND NELLIE NEWELL
Sec. 3
Sec. 2
CULTIVATED
PASTURE
SAVANNAH C. CROW
ST. CLAIR
Prop. Road Connection
ORCHARD
NELS SORENSEN
2 Flumes Type "B"
Borrow "G"
Prop. Temp. Culv.
POT. Sta. 221+49.5
POT. Sta. 231+55.4
218+85 2 Type "A" Flumes
233+90 2 Type "A" Flumes
Sta. 212+42 DA = 1½ Ac. R. Place 24"⌀ x 54' Conc. Pipe Lt 28' Rt 26'
Sta. 219+25 DA = 3Ac. R. Place 24"⌀ x 48' Conc. Pipe Lt 24' Rt 24'
Sta. 227+29 DA = 5Ac. R. Place 24"⌀ x 66' Conc. pipe at Sta. 228+00 Lt 32' Rt 34'
Sta. 209+20 DA = 6Ac. R. Place 24"⌀ x 48 Conc. Pipe Rd. Contr. leave dyke at inlet Lt 25' Rt 23'
A. F. AND NELLIE NEWELL
SAVANNAH C. CROW
SAVANNAH C. ST. CLAIR
Purchased Nov. 23, 1933 $225.00 – 4.80 acres
Easement Apr. 16, 1934 Book 104 – Page 143 County Recorder.
MARTHA ELLIOTT
Purchased Nov. 28 - 33 $570.00 – 2.02 Acres
Easement Apr. 12 - 34 Book 104 - Page 138 County Recorder.
Sta. 234+00 DA = 2Ac. R. Place 24"⌀ x 54' Conc. Pipe Lt 27' Rt 27'
JEFFERSON TWP. T.76 N. R.25 W. Sec. 2
BENCH MARKS
18 Sta. 219+75 Spk. in root of 36" Cottonwood 140' Lt. El. 950.19
19 Sta. 230+00 Bent Spk. in cor. post 135' Rt. El. 956.04
Depress & Grat Flume See note sheet #2.
Prop. F.L.
Curb Section
1½:1 Foreslope Left
1½:1 Foreslope
1½:1 Foreslope on Right
Est. 7 Sta. at 200 cu. yds. per Sta. for proposed road connection = 1400 cu. yds. Included in roadway and borrow estimate.
Rev. Nov. 27, 1933
EUGENE DIETZGEN CO. CHGO. N.Y.
PLATE 1-PLAN-PROFILE
Warren Co. NRH. Proj. # 415 Sheet # 13

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For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.9

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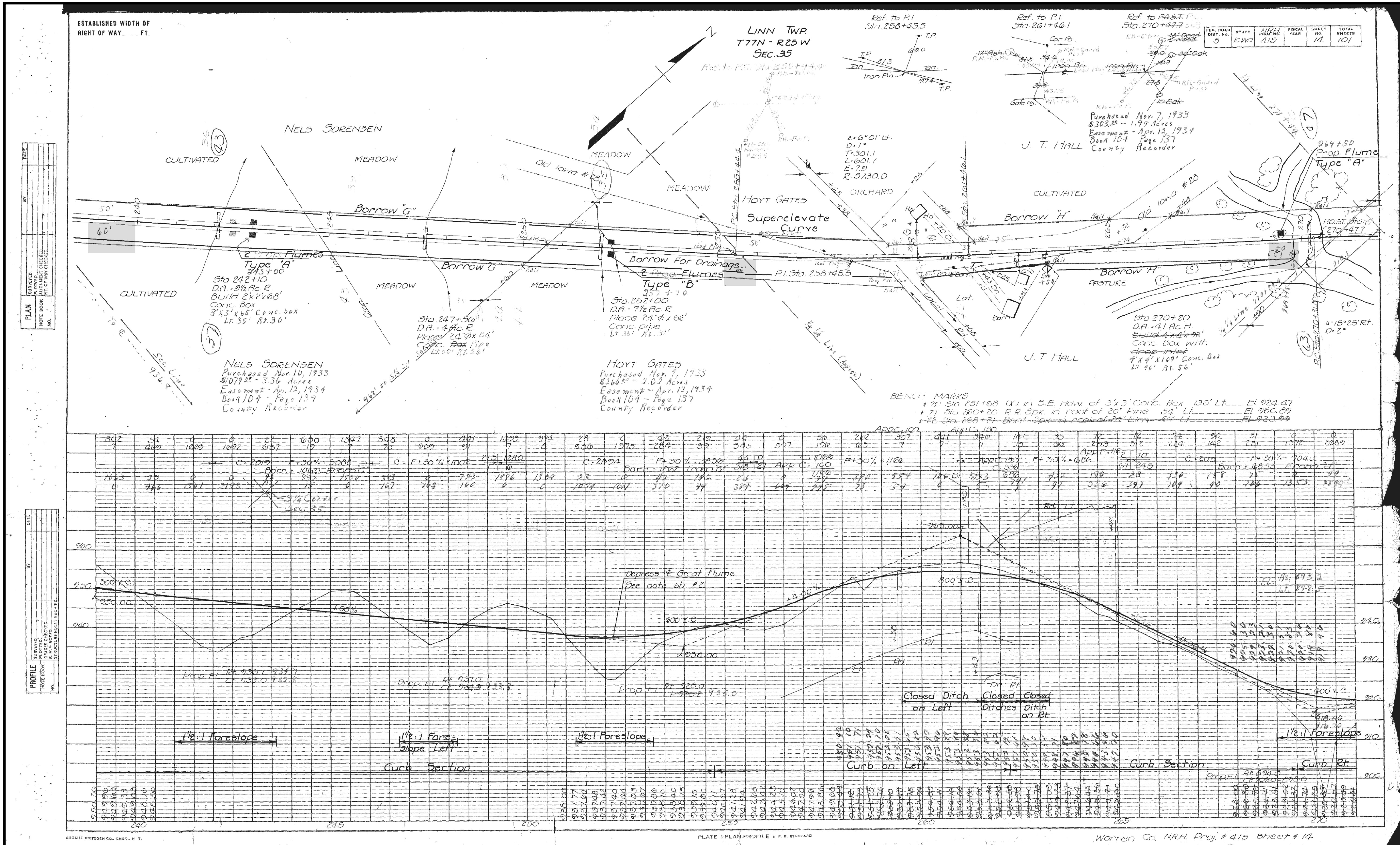

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For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.10

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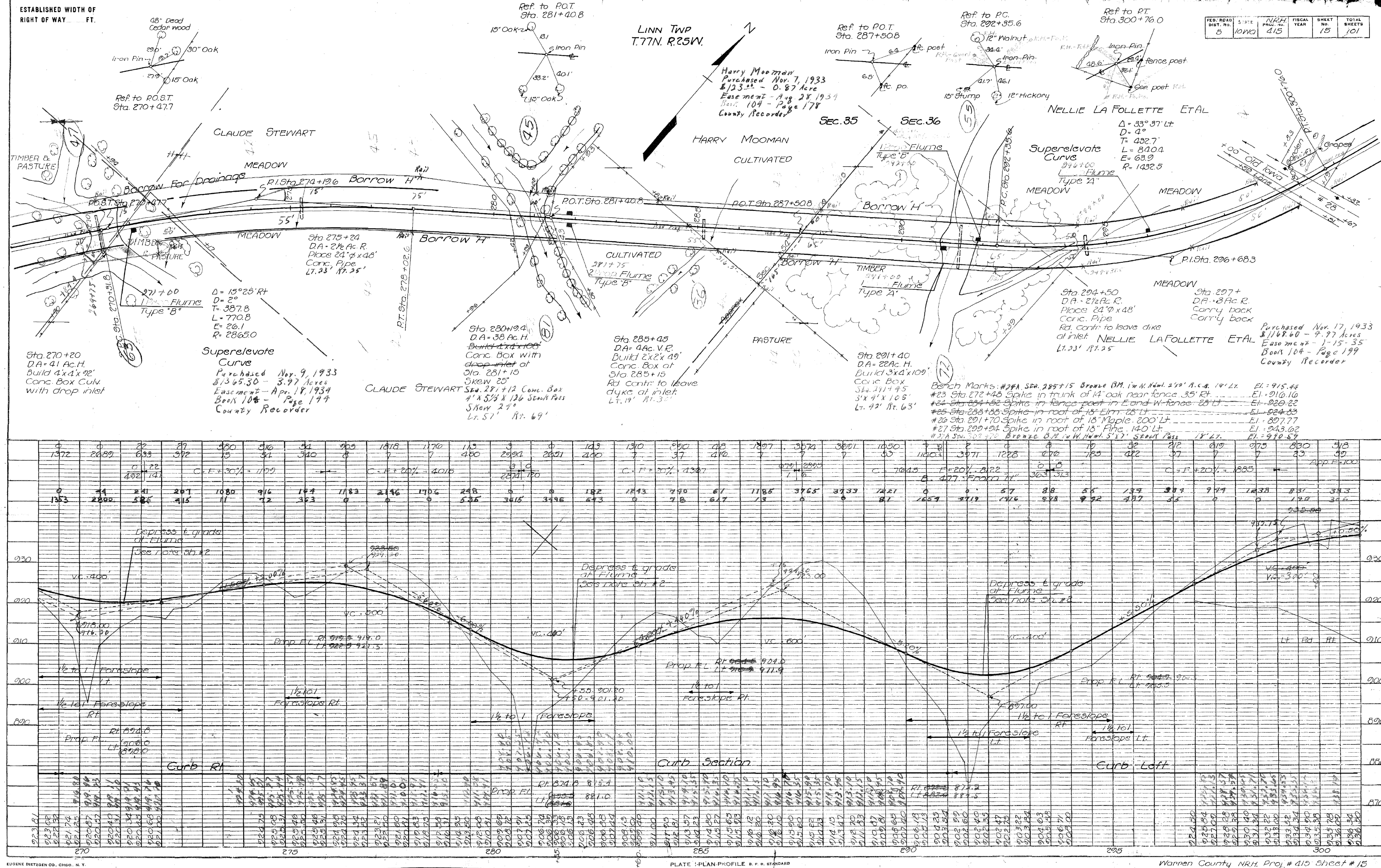

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For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.11

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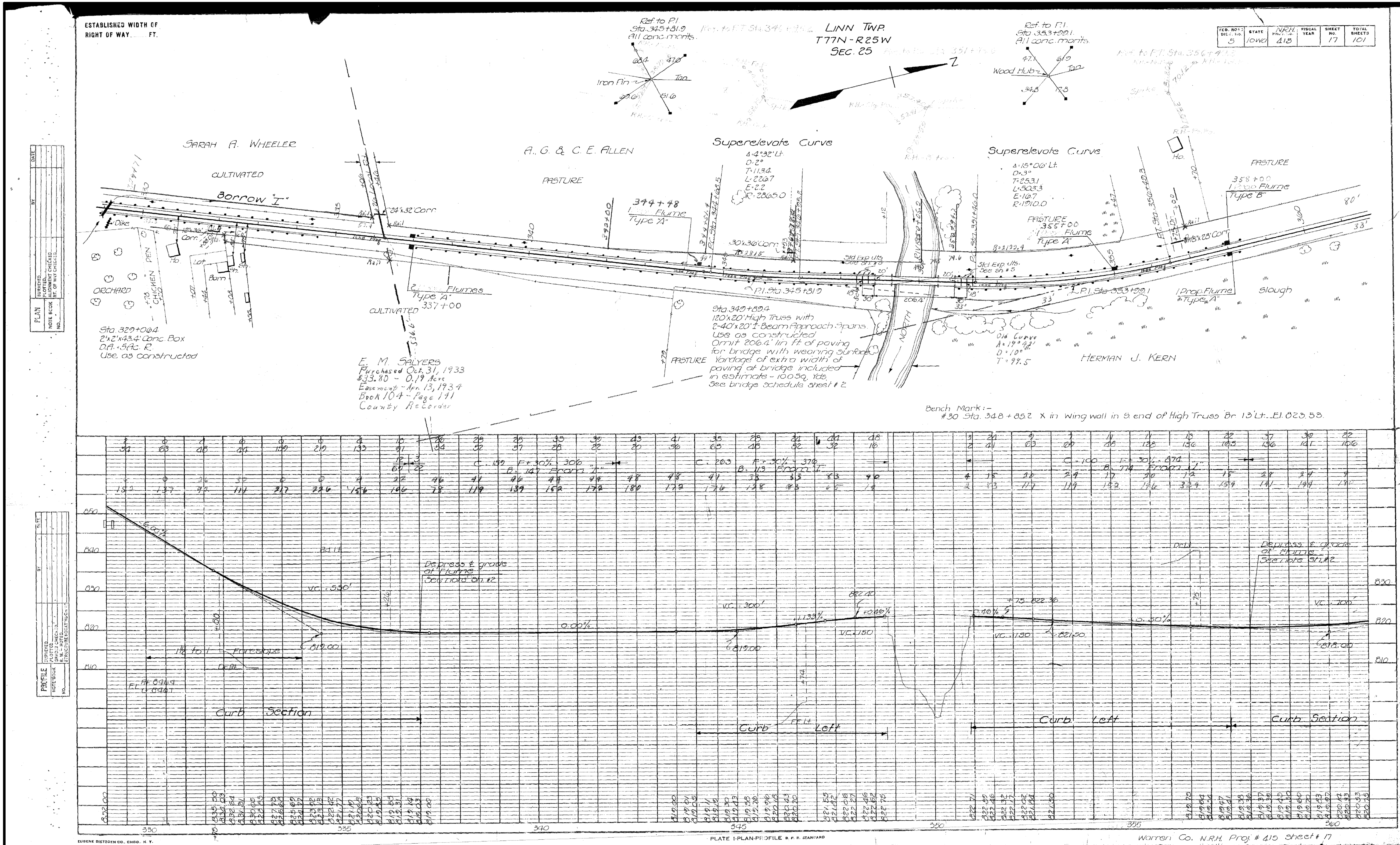
FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.12


ESTABLISHED WIDTH OF RIGHT OF WAY ___ FT.
Ref to P.I. Sta. 345+81.9 All conc. monts.
LINN TWP. T77N-R25W SEC. 25
Ref to P.I. Sta. 353+99.1 All conc. monts.
FED. ROAD DIST. NO. 5
STATE IOWA
N.R.H. PROJ. NO. 415
SHEET NO. 17
TOTAL SHEETS 101
SARAH A. WHEELER
CULTIVATED
A. G. & C. E. ALLEN
PASTURE
Superelevate Curve
Δ 4°32' Lt. D 2° T 113.4 L 226.7 E 2.2 R 2865.0
Superelevate Curve
Δ 15°06' Lt. D 3° T 253.1 L 503.3 E 16.7 R 1910.0
PASTURE
Borrow "I"
344+48 Flume Type "A"
358+00 Flume Type "B"
355+00 Flume Type "A"
P.I. Sta. 345+81.9
P.I. Sta. 353+99.1
Flumes Type "A" 337+00
ORCHARD
CULTIVATED
Sta. 329+06.4 2'x2'x43.4' Conc. Box D.A. 5 Ac. R. Use as constructed
E. M. SALYERS Purchased Oct. 31, 1933 $33.80 - 0.19 Acre Easement - Apr. 13, 1934 Book 104 - Page 141 County Recorder
Sta. 349+89.4 120'x20' High Truss with 2-40'x20' I-Beam Approach Spans. Use as constructed. Omit 206.4' lin ft of paving for bridge with wearing surface. Yardage of extra width of paving at bridge included in estimate - 1005 Sq. Yds. See bridge schedule sheet # 2.
PASTURE
HERMAN J. KERN
Slough
Bench Mark:- #30 Sta. 348+85.2 X in wing wall in S. end of High Truss Br. 13' Lt. El. 823.53.
Depress ¢ grade at Flume. See note Sh. #2
V.C. 550'
V.C. 300'
V.C. 150
V.C. 200'
0.00%
819.00
822.40
+0.40%
822.36
821.50
818.00
1½ to 1 Foreslope
Curb Section
Curb Left
Curb Left
Curb Section
PLATE 1-PLAN-PROFILE
EUGENE DIETZGEN CO., CHGO. N.Y.
Warren Co. N.R.H. Proj. # 415 Sheet # 17

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.13

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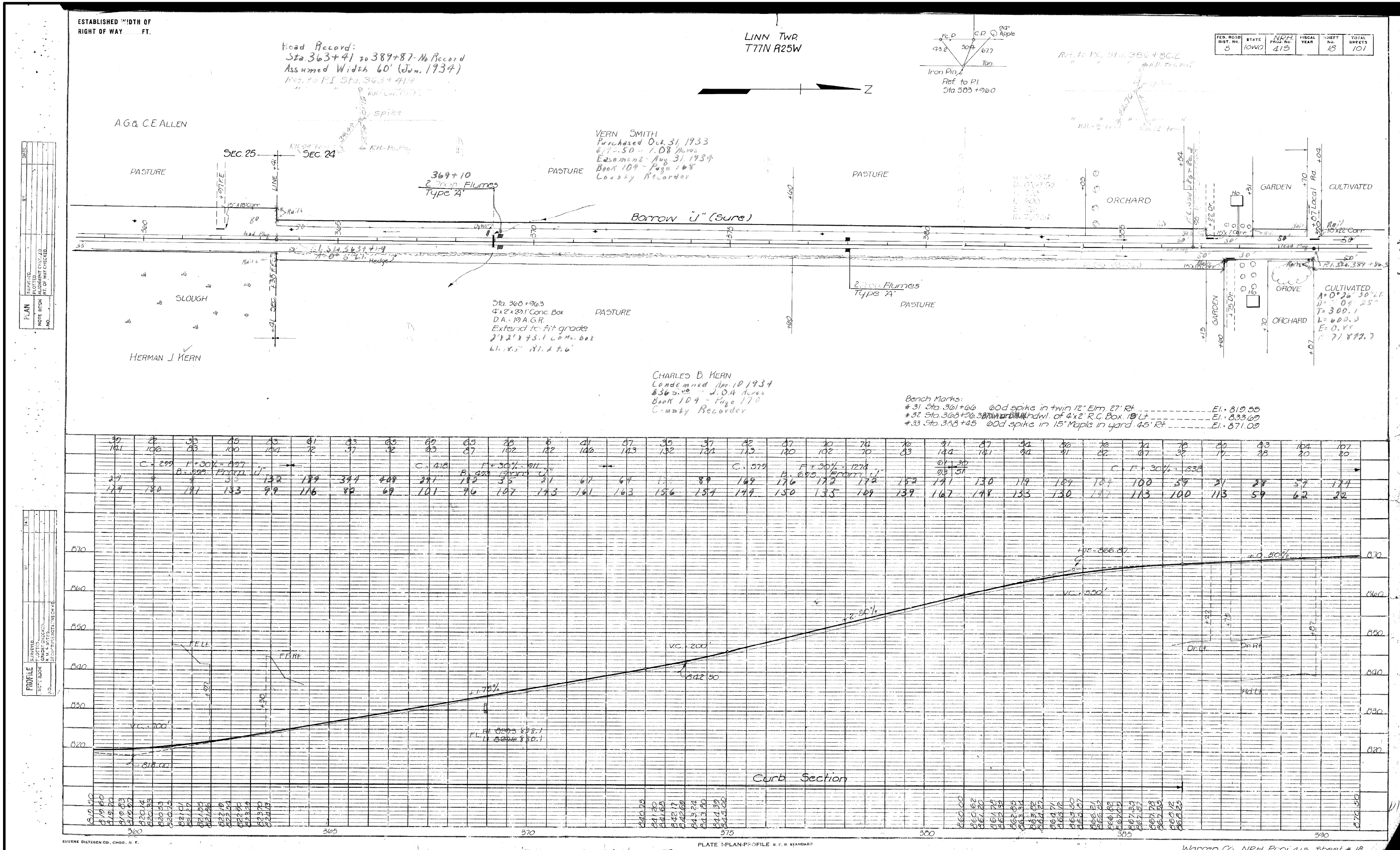
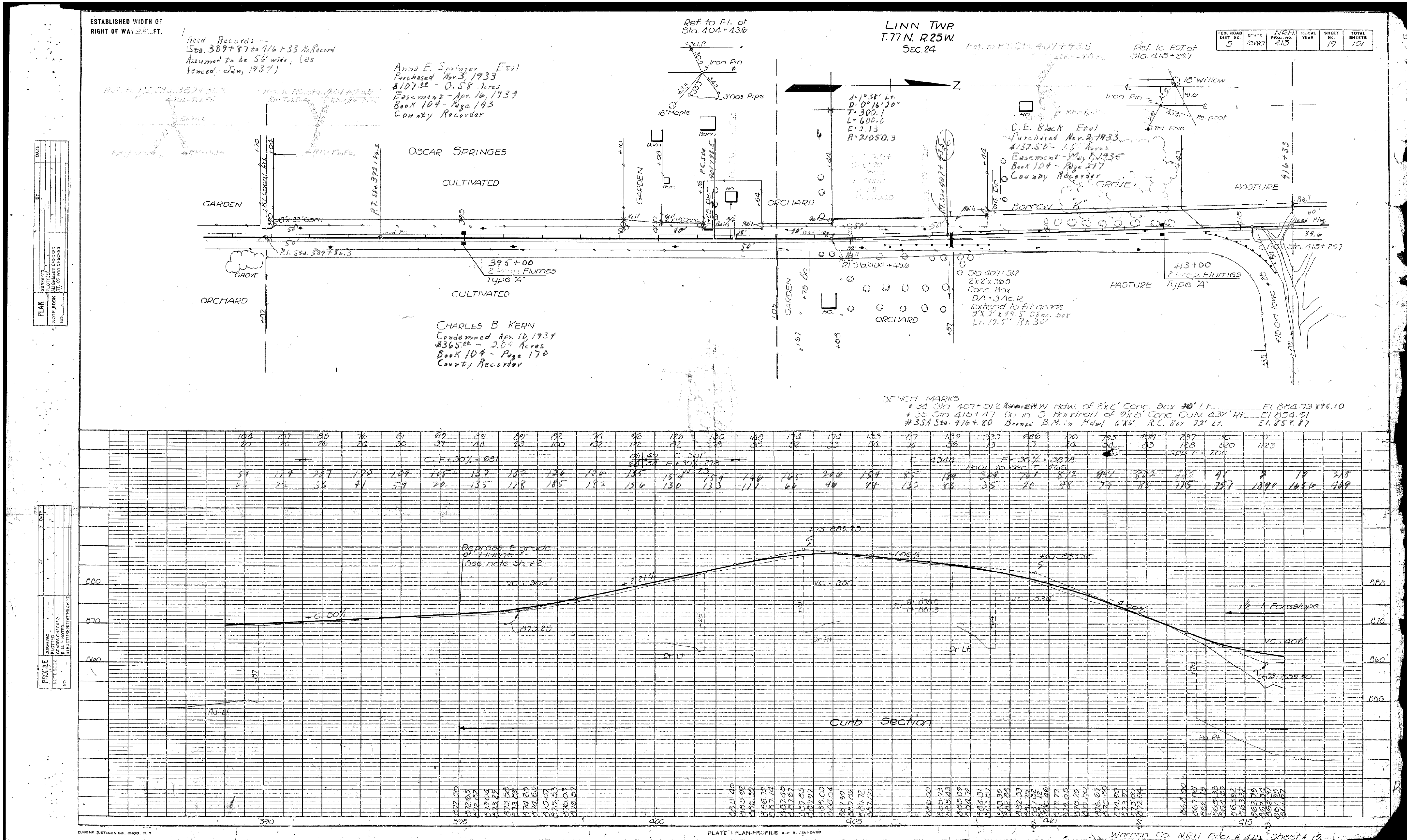


ESTABLISHED WIDTH OF RIGHT OF WAY FT.
Road Record:
Sta. 363+41 to 389+87 - No Record
Assumed Width 60' (Jan. 1934)
LINN TWP.
T77N R25W
FED. ROAD DIST. No. 5
STATE IOWA
NRH. PROJ. No. 415
SHEET No. 18
TOTAL SHEETS 101
A.G.& C.E. ALLEN
SEC. 25
SEC. 24
PASTURE
SLOUGH
HERMAN J. KERN
369+10
2 Iron Flumes Type "A"
VERN SMITH
Purchased Oct. 31, 1933
Easement - Aug. 31, 1934
Book 104 - Page 168
County Recorder
Borrow "J" (Sure)
ORCHARD
GARDEN
CULTIVATED
GROVE
Sta. 368+96.3
4'x2'x39.1' Conc. Box
D.A. - 19 A.G.R.
Extend to fit grade
2 Iron Flumes Type "A"
CHARLES B. KERN
Condemned Apr. 10, 1934
Book 104 - Page 170
County Recorder
Bench Marks:
#31 Sta. 361+66 60d spike in twin 12" Elm 27' Rt. El. 819.55
#32 Sta. 368+96.3 ... of 4'x2' R.C. Box 19' Lt. El. 833.69
#33 Sta. 388+45 60d spike in 15" Maple in yard 45' Rt. El. 871.09
V.C. 200'
V.C. 200'
V.C. 550'
+1.76%
+0.50%
842.50
Curb Section
EUGENE DIETZGEN CO., CHGO., N.Y.
PLATE 1-PLAN-PROFILE
Warren Co. NRH. Proj. 415 Sheet # 18

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON		WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.14


ESTABLISHED WIDTH OF RIGHT OF WAY 56 FT.
Road Record:— Sta. 389+87 to 416+33 No Record Assumed to be 56' wide, (as fenced,- Jan, 1939)
Ref. to P.I. of Sta 404+43.6
LINN TWP. T.77 N. R.25 W. SEC. 24
Ref. to P.O.T. of Sta. 415+29.7
FED. ROAD DIST. NO. 5 | STATE IOWA | N.R.H. PROJ. NO. 415 | SHEET NO. 19 | TOTAL SHEETS 101
Anna E. Springer Etal Purchased Nov. 3, 1933 $107.00 - 0.58 Acres Easement - Apr. 16, 1934 Book 104 - Page 143 County Recorder
OSCAR SPRINGES
CULTIVATED
GARDEN
ORCHARD
GROVE
P.I. Sta. 389+86.3
395+00 2 Pipe Flumes Type "A"
CHARLES B KERN Condemned Apr. 10, 1934 $365.00 - 2.04 Acres Book 104 - Page 170 County Recorder
Δ=1°38' Lt. D=0°16'20" T=300.1 L=600.0 E=2.13 R=21050.3
P.I. Sta. 404+43.6
Sta 407+51.2 2'x2'x36.5' Conc. Box DA - 3 Ac. R. Extend to fit grade 2'x2'x49.5' Conc. box Lt. 19.5' Rt. 30'
C.E. Black Etal Purchased Nov. 2, 1933 $132.50 - 1.5 Acres Easement - May 1, 1935 Book 104 - Page 217 County Recorder
GROVE
PASTURE
Borrow "K"
413+00 2 Prop. Flumes Type "A"
Old Iowa 28
P.O.T. Sta. 415+29.7
BENCH MARKS
#34 Sta. 407+51.2 B.M. Hdw. of 2'x2' Conc. Box 20' Lt. El. 884.73 886.10
#35 Sta. 415+47 (X) in S. Handrail of 9'x8' Conc. Culv 43.2' Rt. El. 854.91
#35A Sta. 416+80 Bronze B.M. in Hdwl 6'x6' R.C. Box 22' Lt. El. 854.87
Depress ℄ grade at Flume See note Sh. #2
+0.50%
+2.21%
V.C. 300'
V.C. 350'
V.C. 350'
V.C. 400'
-1.06%
-4.00%
+75 889.25
+67 883.32
873.25
+33 852.90
1½ : 1 Foreslope
Curb Section
390
395
400
405
410
415
EUGENE DIETZGEN CO., CHGO., N.Y.
PLATE I PLAN-PROFILE B.P.R. STANDARD
Warren Co. N.R.H. Proj. #415 Sheet #19

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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.15

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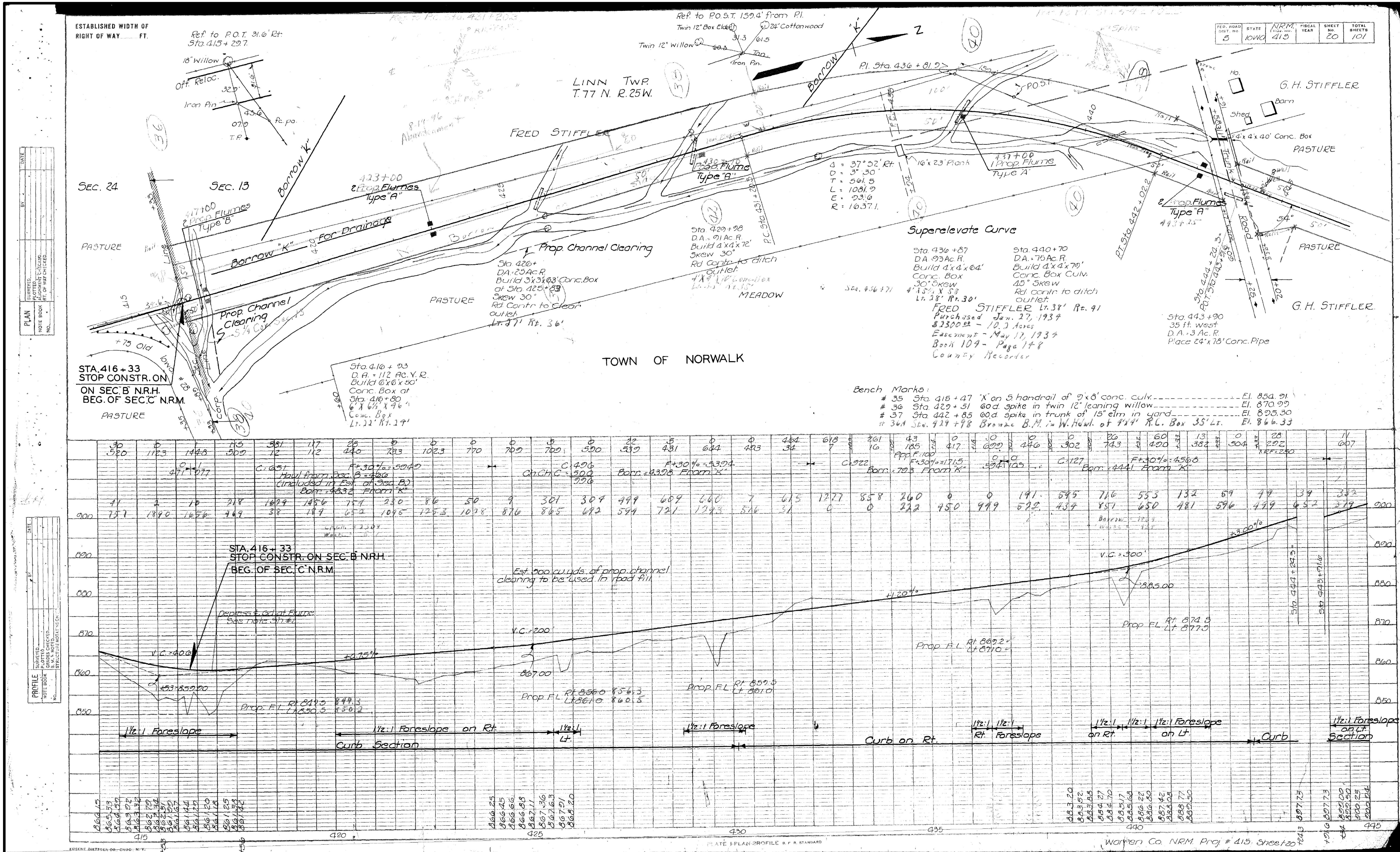

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON		WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.16

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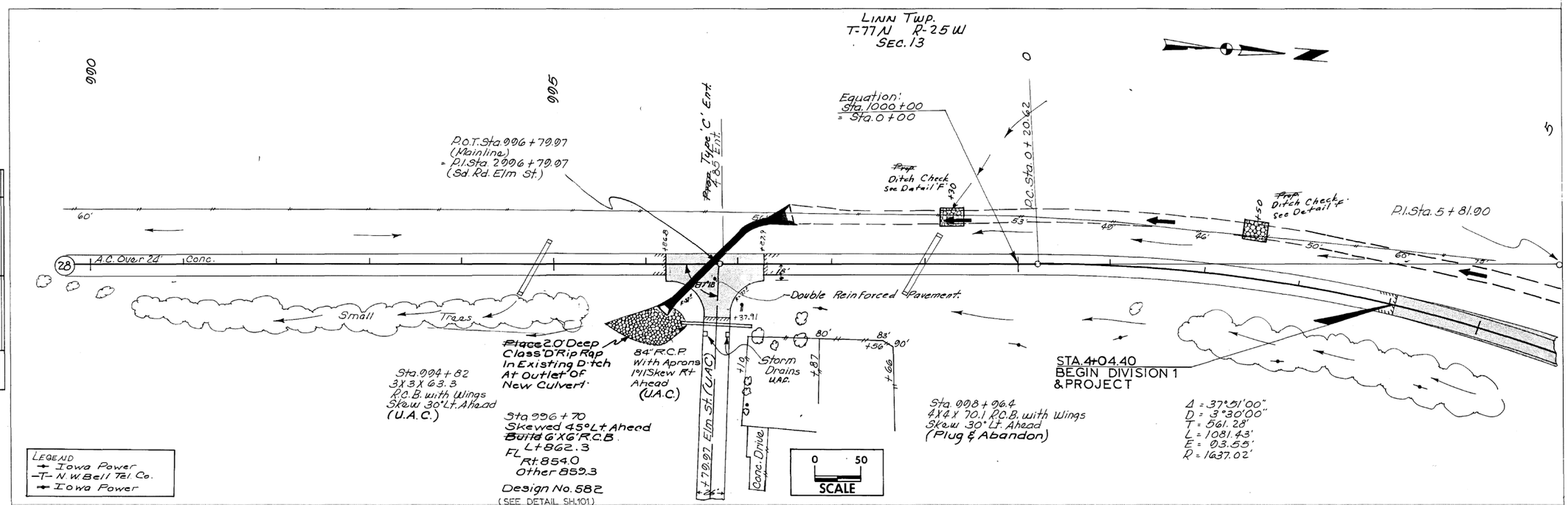
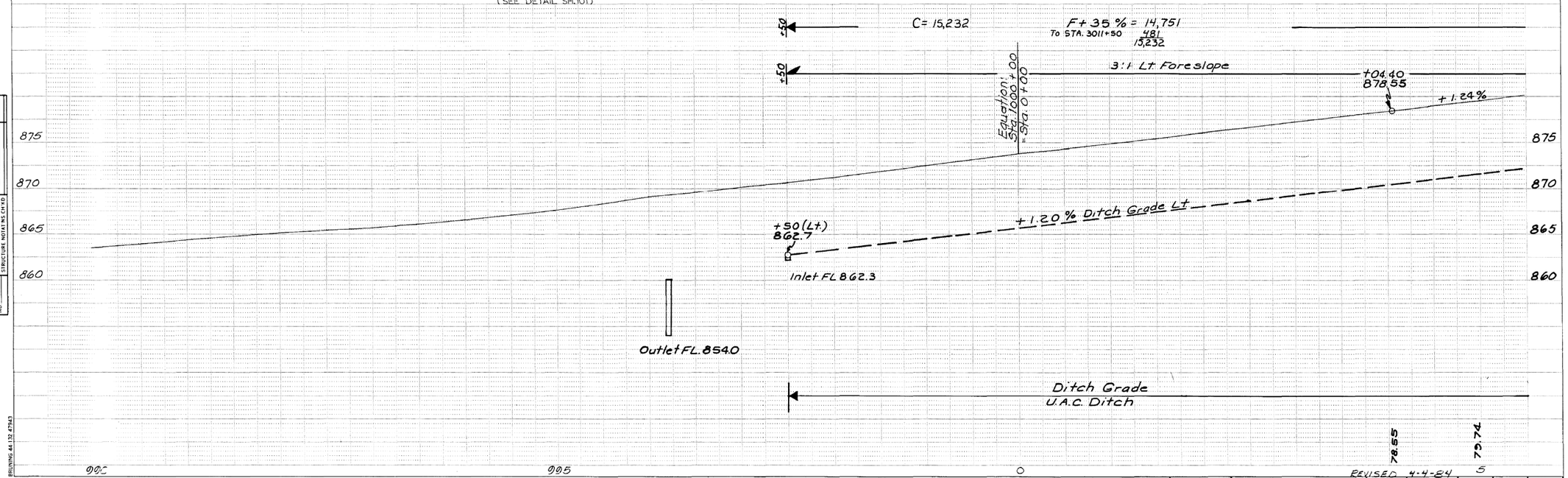
LINN TWP.
T-77 N R-25 W
SEC. 13





PLAN — SURVEYED — PLOTTED — CHECKED — ALIGNMENT CHECKED — RT. OF WAY CHECKED — NOTE BOOK — NO. — DATE — BY

PROFILE — SURVEYED — PLOTTED — CHECKED — DRAWN — B.M. NOTED — STRUCTURE NOTATIONS CHKD — NOTE BOOK — NO. — DATE — BY

BRUNING 44 132 47943

REVISED 4-4-84

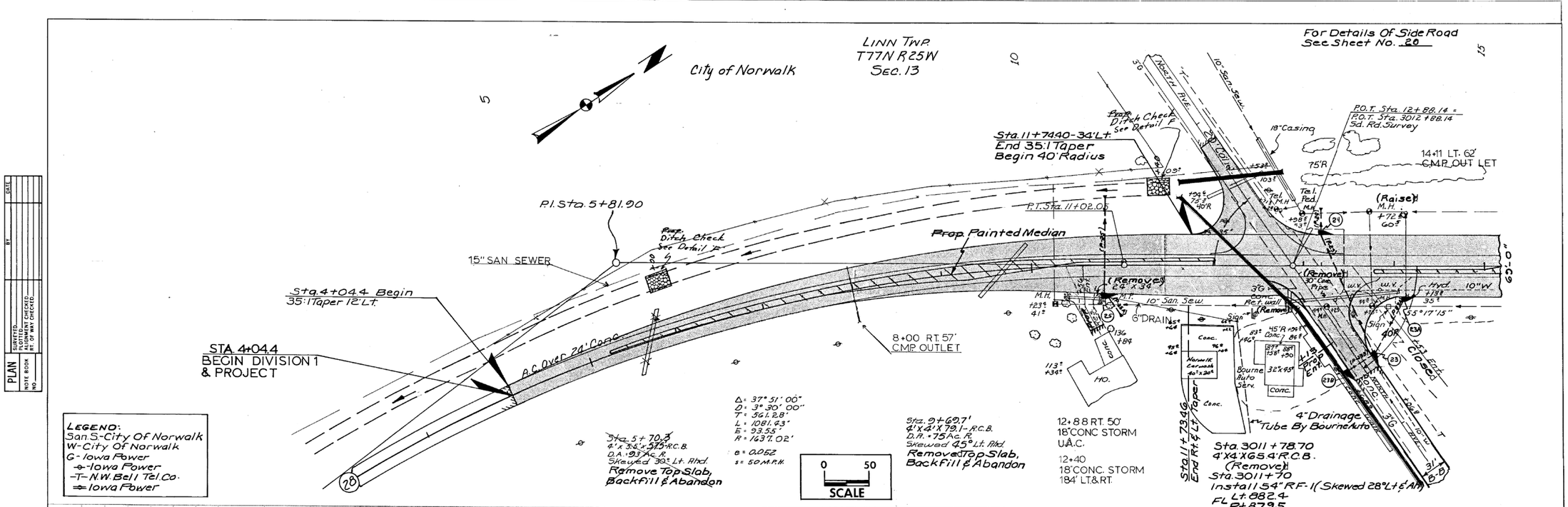
Warren Polk COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-28-1(2)--20-91	IOWA	5		4	331

This Sheet
For Information Only

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.17

3:02:18 PM 3/9/2022 kjackso pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\9102801022\Design\CADD_Files\Sheet_Files\SHT_91028016_D01_D18.dgn



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FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	WARREN COUNTY	PROJECT NUMBER STP-028-1(16)--2C-91	SHEET NUMBER D.18	

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108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. Through traffic on IA 28 shall be maintained at all times.

2. Access to all properties shall be maintained at all times.

3. The detail on J.2 is the Traffic Control Plan for Centerline Rumble Strip installation on HMA surfaces. Pavement markings shall be replaced within 48 hours of removal.

4. If necessary to complete sideroad pavement replacement; lane closures and street closures shall be in accordance with TC-212, TC-251, and TC-252. Safety Closures or Type III barricades placed to protect work area will not be counted or paid for separately.

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None anticipated	

108-25
10-21-14

511 TRAVEL RESTRICTIONS

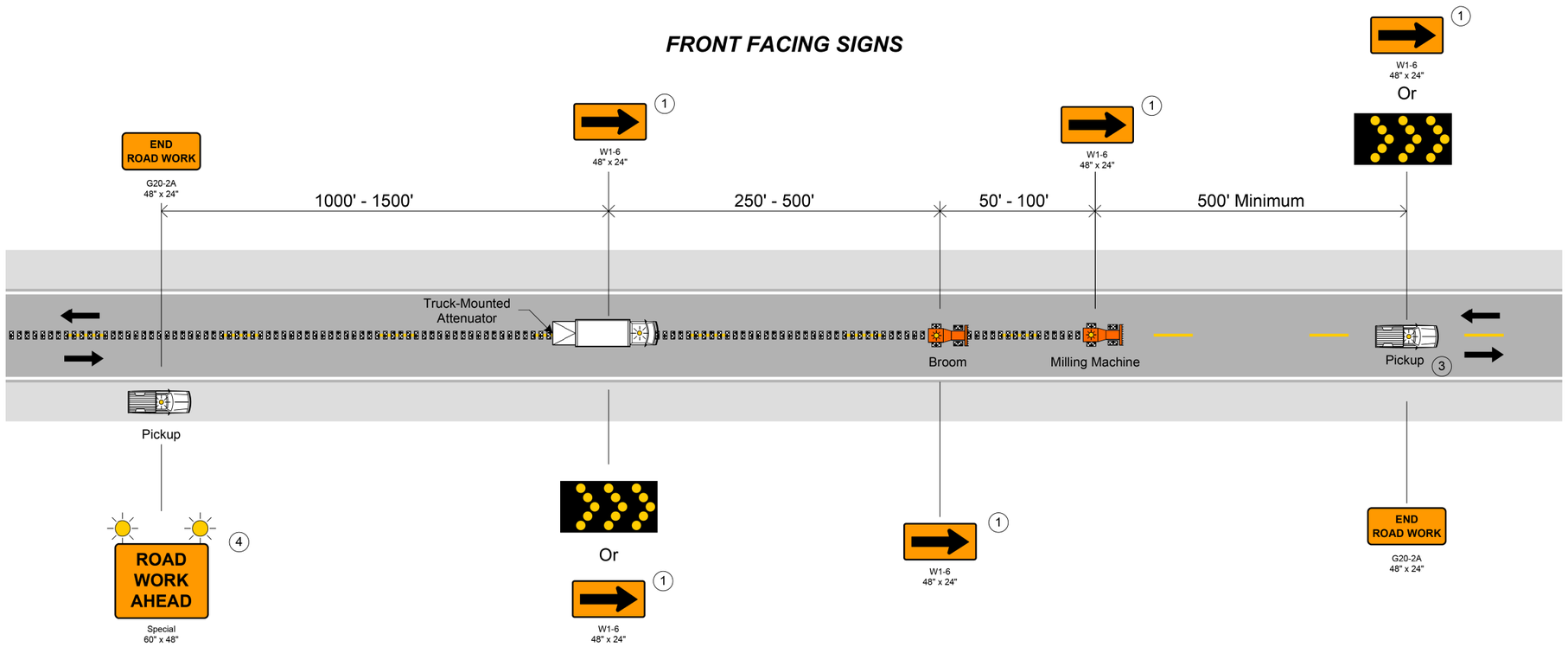
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
IA 28	BOTH	Warren	0.1 mi N of IA 92 to 0.2 mi S of W North Ave in Norwalk		Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(1)

(1) Restriction is during milling and paving operations.

108-26A
08-01-08

STAGING NOTES

FRONT FACING SIGNS



REAR FACING SIGNS

All vehicles shall be equipped with an amber revolving light or an amber strobe light.

(1) Optional SYG sign background

(2) This arrow display may be operated in a four-corner caution mode.

(3) This vehicle should move to the shoulder to accommodate passing traffic.

(4) A vehicle-mounted CMS may be used in lieu of this sign.

01-17-19

CENTERLINE
RUMBLE STRIPS
TWO-LANE